EXPLORING SOURCES OF KNOWLEDGE UTILIZED IN PRACTICE AND PREDICTORS OF RESEARCH UTILIZATION AMONG JORDANIAN REGISTERED NURSES

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COMMITTEE DECISION

This Dissertation (Exploring Sources of Knowledge Utilized in Practice and Predictors of Research Utilization among Jordanian Registered Nurses) was successfully defended and approved on 7/8/2011.

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DEDICATION

With all my love, I dedicate this dissertation to my husband, Mahmoud Qutami, for trying to make all things possible. In addition, to my sons Omar, Abd Alrahman and my daughter Batool, who have filled my life with unconditional love, kindness and joy. Thank you for your support, love, care and assistance during good and hard times of my study. I can truly say that without all of you I would not have accomplished this life goal. We have traveled this journey together and I feel that all of you have earned the doctoral degree along with me. Thank you from the bottom of my heart.

All of you must always strive for something better, anyone can be happy, but the challenge is to be prominent in what you do. I have always been proud of your accomplishments and hope that I have been a good role model, mother, and wife.

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LIST OF ABBREVIATIONS

Abbreviation	**Full name**
BRU	Barriers to Research Utilization
BN	Barriers related to Nurse
BO	Barriers related to Organization
BR	Barriers related to Research
BC	Barriers related to Communication
DTI	Deep Tissue Injury
EBP	Evidence-Based Practice
EPDS	Edinburgh Postnatal Depression Scale
ETPGQ	Exploring Theory-Practice Gap Questionnaire
JNC	Jordanian Nursing Council
JNMC	Jordanian Nurses and Midwifery Council
LDL-c	Low-Density Lipoprotein-cholesterol
MDGs	Millennium Development Goals
MOH	Ministry Of Health
P&Ps	Policies and Procedures
PPD	Post Partum Depression
PUs	Pressure Ulcers
RMS	Royal Medical Services
RN	Registered Nurse
RNAO	Registered Nurses Association of Ontario
RU	Research Utilization
SFC	Suggested Facilitators related to Communication
SFN	Suggested Facilitators related to Nurse
SFO	Suggested Facilitators related to Organization
SFR	Suggested Facilitators related to Research
SFRU	Suggested Facilitators to Research Utilization
SPSS	Statistical Package for Social Science

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ABSTRACT

It became acknowledged that the incorporation of evidence-based knowledge produced by qualitative and quantitative studies into practice reduces the cost of health care, increases personal productivity, improves health, and decreases the pain and suffering of patients. Consequently, the concept "research utilization" has appeared as an important concept to healthcare providers. However, there are many barriers that prevent research utilization into clinical areas. The general aim of this study is to explore the sources of knowledge Jordanian registered nurses use during their practice and the predictors that facilitate and/or limit the utilization of research findings in clinical practice.

A descriptive correlational design was used to collect data from 539 Jordanian registered nurses from 10 hospitals, using a self-administered questionnaire.

The mean year of experience of the sample was 7.08 years. Results revealed that the most common source of knowledge utilized by nurses is information gained through nursing education. The results reflect the presence of several barriers to RU, most of them were related to organization characteristics, the greatest barrier was the routine is dominate in nursing profession. Multiple linear regressions indicated that the included demographic and contextual characteristics and barriers to RU explained 76% of RU.

Jordanian registered nurses recognize the value of research and that RU is an important issue and must not be ignored. The study has many implications for practice, education and research. Health care managers and decision makers need to play a more visible and instrumental role in encouraging RU and removing the barriers and supporting the facilitators to RU to improve patients' quality of life.

CHAPTER ONE

Introduction

This chapter provides the background information about research utilization at the national and international level and its importance to health care field in general and specifically to nursing profession. Also, it provides information about the study purposes, problem statement, and research questions. In addition, this chapter presents the conceptual framework for the study, and the conceptual and operational definitions of the study variables. The significance of the study is also highlighted.

1.1. Background

Nurses around the world form the largest health care workforce, with 2.6 million jobs (Burean of Labor Statistics, 2010). Most of their jobs are in hospitals. The major role of registered nurses, regardless of their specialty and work setting are: providing nursing care, educating, providing health education information related to the activities of daily living, emotionally supporting patients and their families, assisting in performing diagnostic tests, and assisting with patient follow up and rehabilitation. The most frequently used sources of knowledge by nurses arranged in descending order were: nurses' experience, nursing schools, work place sources, physicians, intuitions, and what has worked for years (Estabrooks, 1998).

Globally, in the last few decades, the body of nursing knowledge has been enormously widened. The number of highly educated nurses has increased and is still growing (Kajermo, Nordstrom, Krusebrant, & Bjorvell, 1998). It became acknowledged that the incorporation of evidence-based knowledge produced by qualitative (Hall, 2006) and quantitative studies into practice reduces the cost of health care, increases personal productivity, improves health, and decreases the pain

and suffering of patients (Institutes of Medicine, 2001). While in 1988, Heater, Becker, and Olson (1988) added that patients who receive their care according to the best evidence experience a 28% better outcome that those received their care according to traditional methods. Consequently, the concept "research utilization (RU)" has appeared as an important concept to healthcare providers.

Many initiatives were undertaken by governmental and nongovernmental organizations to encourage the development of evidence-based health care systems. Protocols and evidence-based guidelines were developed to guide interventions (Gerrish, Ashworth, Lacey, Bailey, Cooke, Kendall, & McNeilly, 2007). The National Institute for Health and Clinical Excellence was established in 1999 in England to provide national guidance on promoting good health, preventing, and treating ill health. The Scottish Intercollegiate Guidelines Network was established in 1993 to get better quality of health care for patients in Scotland by reducing difference in practice and outcome, through the development and dissemination of national clinical guidelines including recommendations for effective practice based on current evidence. In the United States, the Agency for Healthcare Research and Quality was established in 1999 to improve the quality, safety, efficiency, and effectiveness of health care for all Americans. More recently, the National Institute for Clinical Studies was established in Australia in 2006 to improve health care by getting the best available evidence from health and medical research into everyday practice (Gerrish, et al., 2007).

Despite that the concept "RU" is an old one; there is no consensus on its definition among scientists. RU has been defined as:

- "The process by which scientifically produced knowledge is transferred to practice" (Brown, 1999).

- "The use of the findings from a disciplined study or a set of studies in a practical application that is unrelated to the original research" (Polit & Beck, 2008, p. 29)
- a specific kind of knowledge utilization whereby the knowledge has a research base to confirm it. It is a complex process through which knowledge, in the form of research findings of one or more studies is utilized in one of three manner; instrumental, conceptual or persuasive utilization (Estabrooks, 1998).

Instrumental RU is the real use of research in clinical practice, when the research findings are transformed into an applicable form, such as clinical practice guidelines or protocols. Conceptual RU is used to change opinion or mentality but not necessarily accompanied by particular actions. Persuasive (or symbolic) RU is the use of research knowledge as a political tool to influence legitimate policies and decisions (Estabrooks, 1998).

Since the beginning of 1970s, the use of research findings as evidence for practice has been and still is a top priority for the nursing profession (Penno, Graham, & Slater, 2008). However, the nursing literature is still discussing the gap between research and clinical practice (Kahn, Ryan, Beckett, Taylor, Berrebi, Choe, Quiter, et al, 2011; Cummings, Hutchinson, Scott, Norton, & Estabrooks, 2010). Millenson (1997) reported that 85% of health professionals' work had not relied on evidence-based practice. Additionally, Balas & Boren (2000) indicated that the average gap between knowledge generation by experimental studies and its implementation in clinical practice is 17 years. According to Kahn, et al, (2011) there is growing consensus that the organizational factors are the big faced challenges in transferring research findings into clinical practice more than the nurse or research factors.

Jordan, in the last few decades, witnessed a great progress in the field of nursing science. The number of universities offering a Bachelor degree in nursing increased from one program in 1972 to 15 programs in 2011. Likewise, the number of universities offering a master degree increased from one in 1986 to three in 2011. Moreover, a doctoral program was launched in the year 2005 at the Faculty of Nursing –The University of Jordan (The University of Jordan, 2010). The number of published papers conducted by Jordanian nurse researchers increased from only one in 1958 to approximately 214 by 2010 in which around 72 studies were served to clinical practice (the majority of these studies (97.5%) were conducted by academicians and only 1.60% conducted by clinicians), most of which were published in international journals (Khalaf, 2010). In addition, Jordan started conducting national and international scientific days and conferences since the 1990's. However, the theory-practice gap still exists.

The presence of theory-practice gap was highlighted by Her Royal Highness Princess Mona Al-Hussein in her speech in the second International Jordanian Nursing Council Conference. This was related to poor process of dissemination of research findings (HRH's Princess Mona Al-Hussein, speech in the Second International Jordanian Nursing Council Conference, 2008). Additionally, the Jordanian Nursing Council (JNC) in 2010 highlighted that all nurses practices must be evidence-based. Despite that, RU was not studied adequately. Halabi and Hamdan-Mansour (2010) conducted a study to evaluate the attitudes of Jordanian nursing students toward nursing research. The findings of this study revealed that Jordanian nursing students have positive attitudes toward research and they believed in the role of research in improving nursing profession. The research abilities, usefulness of

research, personal interest in research and using research in clinical practice were the four domains of attitude that were identified.

This is the first study in Jordan that was investigated RU in clinical areas. The general aim of this study is to explore the sources of knowledge Jordanian registered nurses use during their practice and to identify the predictors that facilitate and/or limit the utilization of research findings in clinical practice.

1.2. Problem statement

Over the years, it is well acknowledged that the application of research findings into clinical practice improves the quality of nursing care, improves the health outcome of patients, and decreases the cost of health care (Billings & Kowalski, 2006). Sources of knowledge, barriers and facilitators to RU are varied among cultures. The existing health care systems around the world is facing a big challenge and requirements such as increasing the focus toward evidence-based practice, the quality of provided care, and the cost of health care services (Lyder, 2006; Penz & Bassendowski, 2006; Atkinson & Turkel, 2008). These changes will affect health care system in Jordan negatively specially nursing profession if they don't rely their practice into strong and valid evidence. Such changes will require the identification of sources of knowledge that nurses used during their duty and RU barriers facing nurses in hospitals. Such challenges necessitate answering the question: what are the sources of knowledge that guide the practice of Jordanian nurses and the predictors for the utilization of nursing research findings in Jordan?

The answer to this question may assist managers, decision makers, and nurses in implementing strategies to overcome barriers to RU, develop plans to improve the nursing profession and quality of care, accelerate the improvement in patients' health,

decrease the cost of health services, and overcome the gap between the theory and practice.

1.3. Significance of the study

Understanding sources of knowledge used in everyday practice is very helpful in improving the quality of health care services. There is a consensus in the literature that nurses mostly relied in their practice on experiential knowledge gained through their interactions with other members of healthcare professionals and patients (Estabrooks, Rutakumwa, O'Leary, Profetto-McGrath, Milner, Levers, & Scott-Findlay, 2005; Gerrish & Clayton, 2004). The other utilized sources of knowledge were documents such as text books, journals, procedures, unit educational materials, etc., and intra-personal sources such as knowledge gained from nursing school, common sense, and personal beliefs. (Estabrooks, et al., 2005). All of these sources were utilized more than research findings (Gerrish & Clayton, 2004).

The implementation of research findings into clinical practice is the first step toward evidence-based practice (Salsali & Mehrdad, 2009). It may improve the image to nursing profession, and the quality of nursing care, accelerate the positive health outcomes of patients, decrease the cost of treatment, decrease the length of stay of patients in hospitals, increase the trust of people in Jordanian nurses, and maintain the integrity of the institutions (Hall, 2006).

The lack of using the formal sources of evidence and incorporating their findings into clinical areas were related to multiple and diverse barriers. Lack of time, resources and authorities to change practice were the greatest three barriers that faced clinical nurses (Gerrish & Clayton, 2004; Penz & Bassendowski, 2006; Atkinson & Turkel, 2008). For example; nurses in clinical practice continue to use and instruct student nurses in the use of the dorsogluteal injection site as the site of choice for

intramuscular injections, despite abundant evidence regarding the complications associated with using this site. Advancing the use of the ventrogluteal (located in the hip) injection site is a challenge, primarily owing to nurses' lack of familiarity with its anatomical landmarks and the published evidence on its benefits (Floyd & Meyer, 2007).

On the other hand, there are several factors that may facilitate the incorporation of research findings into clinical practice. According to Ploeg, Skelly, Rowan, Edwards, Davies, Grinspun, Bajnok, & Downey (2010) the dissemination of information about clinical practice guidelines, specifically through education and mentoring, being influential practice leaders at interdisciplinary committees, and tailoring the guideline implementation strategies to the organizational context were the greatest suggested facilitators. While Panagiari (2008) pointed out that both availability of time and staff hires were facilitators at 86% in research findings. Additionally, there are several contextual and demographic characteristics that may interfere with RU. Nurses working in contexts with more positive culture, leadership, and evaluation reported significantly more RU (Cummings, Estabrooks, Midodzi, Wallin, & Hayduk, 2007). Ofi, Sowunmi, Edet, & Anardo (2008), Veeramah (2004), Tsai (2000), and Smirnoff, et al. (2007) found significant relationship between the level of education, age, and job title and RU. The main predictors of RU include attitude toward research, awareness of information based on research, and involvement in research activities (Milner, Estabrooks, & Humphrey, 2005).

In Jordan, according to the modified public health law number 54 for the year 2007 (Civil Health Insurance regulation number 46 for the year 2007), among the responsibilities of the Ministry Of Health (MOH) are to collect and disseminate health information, which overtly convey a call for utilizing the research in practice.

Although, the numbers of published Jordanian research studies have recently increased, yet, knowledge about how much nursing care provided to patients in Jordan is based on research findings remains unclear. This study is the first in Jordan that focuses on exploring sources of knowledge, barriers and facilitators of using research knowledge and those predictors adherent to nurses' utilization of research into their practice (Personal contact with Prof. Khalaf, 2011). Thus, the results of this study will help managers and policy makers to fid out if nursing practice is based on strong evidence and to identify the barriers and facilitators to RU in their organizations which may provide directions for future training of nurses and developing strategies to promote the nurses action toward evidence-based practice.

The findings of this study will add to the current body of literature regarding factors affecting RU among nurses in Jordan and in countries with parallel or similar clinical context. Also, it will contribute to the knowledge by exploring new predictors that may affect the use of research findings in clinical practice. Also, the instrument that have two sections created by the researcher (Demographic and contextual data form, Barriers to RU Scale), and the remaining sections which adopted by the researcher is considered the first to be used for this purpose in Jordan and can further be tested to become a standardized tool to study this phenomenon in Jordan and the Arab region.

1.4. Research questions

This study addressed the following research questions:

1. What are the most common sources of knowledge used by Jordanian registered nurses to guide their practice?
2. To what extent do Jordanian nurses' utilize research findings in their clinical practice?

3. What are the barriers and facilitators to research utilization among Jordanian registered nurses?
4. Is there a relationship between selected sample's characteristics (demographics and contextual), barriers to RU, suggested facilitators to RU and RU among Jordanian nurses'?
5. What are the predictors of RU among Jordanian registered nurses?

1.5. The Conceptual framework

The conceptual framework of this study is based on Rogers' Diffusion of Innovation theory. Rogers (2003) defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system." (p. 5). According to this definition, the diffusion of innovations consists of four main elements: innovation, communication channels, time, and social system. The innovation is defined as an idea, practice, or project that is perceived as new by an individual or other unit of adoption. Communication is defined as "a process by which participants create and share information with one another in order to reach a mutual understanding". Communication occurs through channels between sources. An individual or an institution is usually considered a source that originates the messages (Rogers, 2003, p. 5). The time dimension in research diffusion illustrates one of its strengths and it indicates the rate of adoption of the innovation.

The innovation-decision process was defined as an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation (Rogers, 2003). The innovation-decision process involves five chronological steps: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation (Figure 1.1).

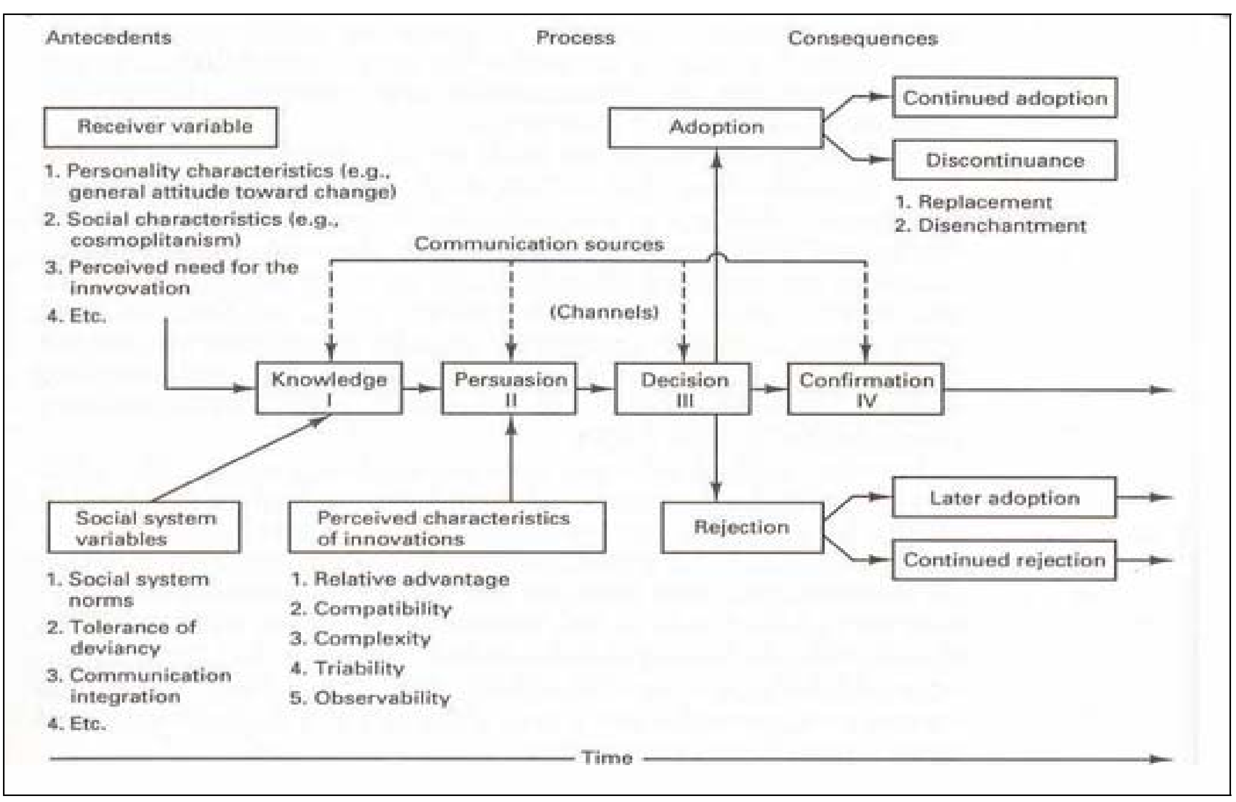


Figure 1.1. Rogers Diffusion of innovation model. (2003)

Rogers (2003) identified the adopter categories as the classifications of members of a social system on the basis of innovativeness. Innovativeness is "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system" (p. 22). Rogers defined the rate of adoption as "the relative speed with which an innovation is adopted by members of a social system"(p. 5). The social system is defined as “a set of interrelated units engaged in joint problem solving to accomplish a common goal” (Rogers, 2003, p. 23).

Based on Rogers's theory, the registered nurses working in selected hospitals were considered the adopters, the research studies were considered the innovation, the dissemination of research findings was considered the communication of research studies and the hospitals were considered the social systems (Figure 1.2). RU also may be influenced by some demographic and contextual characteristics.

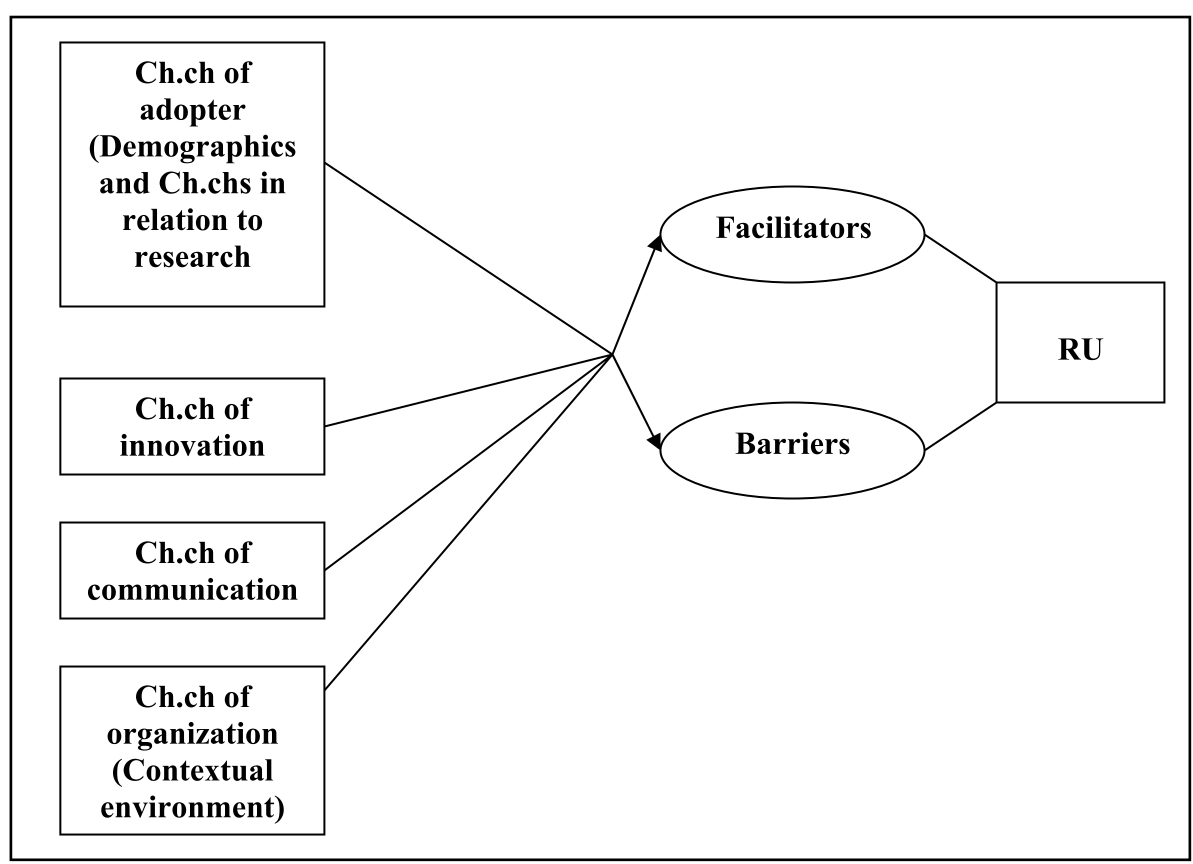


Figure (1.2): Hypothetical Conceptual Model of predictors of research utilization

The researcher hypothesized that all of these elements, individually or collectively, may be facilitators or barriers to RU in nursing practice.

1.6. Conceptual and Operational Definitions of study variables

Conceptual Definitions

Demographic characteristics: Are the characteristics of a human population as used in government, marketing or opinion research, or the demographic profiles used in such research. Commonly used demographics include gender, educational level, employment status, and even location (Wikipedia, 2011).

Contextual characteristics: Refer to the overall environment or setting in which practice takes place (McCormack, Kitson, Harvey, Rycroft-Malone, Titchen, & Seers, 2002).

Research utilization: The use of the findings from a disciplined study or a set of studies in a practical application that is unrelated to the original research" (Polit & Beck, 2008, p. 29).

A Registered Nurse (RN): Is a health care professional who practices nursing through the use of the nursing process in cooperation and collaboration with other health care professionals (Wikipedia, 2011).

The social system: Is the set of interrelated units that are engaged in joint problem solving to accomplish a common goal (Rogers, 2003).

The innovation: Is the idea, practice, or object that is new to the potential adopter (Rogers, 2003).

The communication channel: The means by which one individual shares an innovation with another (Rogers, 2003).

Operational Definitions

Demographic characteristics: Are the characteristics distinctive to each individual participant that may enable or hamper RU in practice. For the purpose of this study, demographic data refer to age, marital status, gender, educational level, employment position, years of experience as reflected by the responses on the section related to demographic data of the questionnaire.

Contextual characteristics: The nurses' reported contextual characteristics are measured by a pencil and paper instrument, containing items from 9 to 24 in the Exploring Theory-Practice Gap Questionnaire (ETPGQ).

Research utilization: The application of research findings into real clinical areas as indicated by the scores obtained by some items (4, 5, 6, 8) in the research activities table in section two of the ETPGQ.

A Registered Nurse: Is the licensed person with at least baccalaureate or three years diploma providing direct care to patients or indirect through a management position at the unit\department level in the selected hospitals obtained by the "Characteristics of the nurse" subscale of ETPGQ.

The social system (Organization): It reflects the organization in which the nurse is practicing as reflected by the subscale "Characteristics of the organization" of ETPGQ.

The innovation: Reflects the research studies as indicated by the scores obtained by the respondent on the subscale "Characteristics of the research study" of ETPGQ.

The communication channel: It reflects the presentation of the research studies as indicated by the scores obtained by the respondent on the subscale "Characteristics of the communication" of ETPGQ.

Sources of Knowledge: Are the methods that nurses used to guide their practice as indicated by the scores obtained by the respondents on the adapted version of the Estabrooks sources of practice knowledge questionnaire.

1.7. Summary

This chapter introduced the statement of the problem, the purpose and research questions, conceptual framework, definitions of the study variables, and the significance of the study. The following chapter reviews the available literature related to the sources of knowledge that nurses used in their practice, and the barriers to and facilitators to RU.

CHAPTER TWO

Review of Literature

A literature search was conducted by viewing relevant studies via computerized searching through EBSCO, Medline, Science Direct, Pub Med, Ovid, and Arabic Journals research databases. Searching in the databases was conducted using these keywords: ‘Barriers to RU’, ‘Facilitators to RU’, ' RU’, ‘registered nurses’, and ‘sources of knowledge’. Also manual search in Jordanian Medical Journals was done; there are no studies related to this topic conducted in Jordan. Inclusion criteria included qualitative and quantitative full text research studies which are written in English. The numbers of reviewed studies were 68.

This literature review focused on six areas. The first area of review looked specifically at sources of knowledge and knowledge base about research. The second area emphasized on the barriers to RU and the third area explored the facilitators to RU. The forth area of review looked at the characteristics of the adopter and RU. While the fifth area of review focused on the strategies used to increase RU. The final area of concern was the actual faced barriers and facilitators during real implementation of research findings into clinical areas.

2.1. Introduction

Research utilization is of utmost importance to nursing. RU is defined as "the process by which scientifically produced knowledge is transferred to practice" (Brown, 1999, p.54). RU is a specific kind of knowledge utilization whereby the knowledge has a research base to substantiate it. It is a complex process in which knowledge, in the form of research, is transformed from the findings of one or more studies into instrumental, conceptual or persuasive utilization (Estabrooks, 2006).

It is well acknowledged that the incorporation of evidence-based knowledge into practice leads to less costs of health care, more personal productivity, longer and healthier lives for patients, and also will decrease pain and suffering of patients (Institutes of Medicine, 2001).

2.2. Sources of knowledge and nurses knowledge base about research

Nursing knowledge is varied and consists of four types of knowing. According to Carper (1978), basic knowledge in a discipline proceeds through pattern identification and development in the areas of: 1) empirics, 2) aesthetics, 3) personal knowing, and 4) ethics.

Empirics: The science of nursing

This type of knowing is factual, descriptive, and empirical, its main purpose is developing general laws, principles and theories to explain describe and predict phenomena of relevance to nursing. Examples of this type of knowledge are the anatomy, physiology, and pharmacology.

Esthetics: The art of nursing

Esthetics is the expressive aspect of nursing. Knowledge gained through the "subjective acquaintance" of direct experience and made visible in the unique ways in which the nurse uses self on behalf of the individual (Carper, 1992, p. 16). It involves the combination and expression of all of the patterns of nursing knowledge into caring which is distinctive to each nurse. It requires integration, synthesis, perception, intuition, creativity, and empathy. Esthetic knowing involves attraction, interpreting and envisioning.

Personal Knowledge: Self-understanding

Personal knowledge is dependent upon the "core capacity" to "access one's own feeling of life- one's range of emotions: the capacity to instantly effect

discriminations among the feelings and eventually, to label them, to catch them in symbolic codes, e.g. language, touch, writing to draw upon them as means of understanding and guiding one's behavior" (Gortner, 1993. p. 239).

Ethics: The moral imperative of nursing

It focuses on issues of duty and responsibility. The person must have the ability to discriminate and make right and honest judgments. It involves valuing, clarifying, and the existential advocacy of the other. Existential means that the person has the human freedom, will, and knowledge to make decisions on their own behalf.

White (1995) added another type of knowing which is the socio-political knowing**.** This type of knowing addresses the environment of persons (nurses and others) and the practice of the profession (both society's understanding of nursing and nursing's understanding of society and its politics). The essential characteristics are exposing, exploring, transforming, transposing, and critiquing. Nurses need all these types of knowing to provide the best nursing care to their patients.

Few studies have discussed the kinds of knowledge that nurses used in their practice (Estabrooks, 1998). Polit & Beck (2004) stated that nurses mostly based their practice on tradition, authority, clinical experience, trial and error, intuition, and logical reasoning. According to Estabrooks (1998), the most sources of knowledge used by nurses as ordered from the most to the least frequent are as follow: nurses' experience, nursing school, work place sources, physician sources, intuitions, and what has worked for years. On the other hand, Ozsoy and Ardahan (2008) found that the most sources of knowledge that nurses used in their practice were the information shared with their colleagues, what has worked with nurses for years, and the traditional way that always done it.

A secondary qualitative data analysis was conducted by Mantzoukas and Jasper (2008) in 2007 on previously collected data in 2002 to identify the types of knowledge used by nurses to guide their practice. The original data were gathered by observing nurses during their work followed by a 45 minutes semi structured tape-recorded interview with 18 registered nurses employed at different medical wards in two different hospitals. Five types of knowledge were identified in this study: personal practice knowledge, theoretical knowledge, procedural knowledge, ward cultural knowledge, and reflexive knowledge.

Personal practice knowledge is person specific; it's acquired by interaction between the nurse and the patient. The theoretical knowledge differs from personal practice knowledge in two aspects; first, the theoretical knowledge is acquired in the formal settings of nursing schools or from books, lectures and scientific journals. Second, nurses can remember the theoretical knowledge, absorb and embody it and conceptualize it as indispensable knowledge that all nurses should own (Mantzoukas & Jasper, 2008). In procedural knowledge, nurses can't explain what they did because this type of knowledge is rooted in doing and proceeds in an unconscious fashion. The procedural knowledge is acquired by observing more experienced nurses in specific situations and do the same in a similar observed situation.

Ward cultural knowledge is defined by Mantzoukas and Jasper (2008) as "familiarization with various written and unwritten norms and rules of the ward" (p. 322). Reflexive knowledge enables nurses, as fast as possible and efficiently, to conduct a series of activities and it is unconsciously implemented in future cases. It requires certain amount of experience to be developed. It includes all the previous four types of knowledge (Mantzoukas & Jasper, 2008).

Currently, it is widely known that the best type of evidence is the evidence which is derived from randomized controlled studies and qualitative research studies (Upton, 1999). The amount of these studies is growing steadily and published in many of journals. These journals publish systematic reviews of nursing research and meta analyses studies which include all the studies conducted on the same topic to investigate if the results are the same under different situations or not. The results of these reviews and Meta analyses studies are popularly used to guide practice.

The results of a study conducted by Estabrooks (1998) indicated that in the field of research, 52.3% of nurses mentioned that the journals are the most widely used source of research knowledge. More specifically, 38.7% of nurses mentioned that nursing journals are the most widely used sources of knowledge. On the other hand, other researchers found that the ward manuals for procedures are currently the most accessible and convincing information source among nurses (Oh, 2008; Squires, Moralejo, and LeFort, 2007).

Squires, et al. (2007) stated that most nurses in Canada (81.9%) used policy and procedure manuals because it consumes less time to lookup than going to the library and search through the internet or journals and then read and critically appraise it. The presence of policy and procedures increases the research utilization but in minimal percentage.

Generally, the basic knowledge and the nursing experience with research are deficit (Ofi, et al., 2008). Thus, the use of research findings as a base for practice is still not popular especially in developing countries (Salsali & Mehrdad, 2009). It is also well documented that most nurses have little or no knowledge about the research process and its implementation into clinical areas (Salsali & Mehrdad, 2009; Veeramah, 2004). This is mostly a result of that the research courses that are taught to

nursing students emphasize on how to conduct research rather than on how to implement research findings (McCurren, 1995). A study by Ofi, et al. (2008) that investigated nurses' knowledge base for research conduct, attitudes toward research and perceived barriers to RU, indicated that 23.6% of nurses in their sample didn't have basic research knowledge, 46.8% have not attended any workshop related to research activities, and 66% of nurses have not participated with other professionals in any research study. Ofi, et al. (2008) concluded that there is general belief that research is only relevant to educators working in universities. Similarly, Kuuppelomaki & Tuomi (2005) stated that 66% of nurses in their sample (n = 400) had never attended any nursing conferences. Only 38% of nurses believed that conducting research is not important for nurses' jobs. On the other hand, Veeramah (2004) reported that knowledge about research is an important factor to update practice.This knowledge will increase person's positive attitude toward research.

Aydin and Karadag (2010) study is an example of nurses knowledge deficit about the best practices which are based on research. Aydin and Karadag (2010) descriptive study aimed to identify the nurses' knowledge and usual practice in prevention and management of deep tissue injury (DTI) and stage 1 pressure ulcers (PUs). The results of this study revealed low mean scores when nurses were asked about assessment and management of DTI and stage one PUs. From these findings the researchers concluded that it is obvious that nurses had little knowledge about management and diagnosis of DTI and stage 1 PUs. This little knowledge resulted from lack of reading recent researches, which might be due to unavailability of these researches in clinical areas or other factors mentioned in third section. This lack of knowledge leads to negative effect on patients' health and increase the cost of healthcare services.

In summary, the reviewed studies indicated that nursing knowledge consists of five main types of knowing; empirics, aesthetics, personal knowing, ethics and socio-political knowing. The nurses must instruct to use all of these types because each type completes the other types. It is obvious that the most sources of knowledge used by nurses are not scientific such as nurses' experience, intuition, tradition...etc. Currently, the best sources of knowledge are research studies. Nursing knowledge about how to conduct research and implement research findings into clinical areas is deficit. Now, it is very important to increase nurses' knowledge about the importance of implementing research findings into clinical areas.

2.3. Barriers to nursing research utilization

Most nurses believe in the role of implementing research findings in developing and empowering the profession of nursing, improving the quality of care provided to patients, and indicating the greatest change in nursing practice results (Billings & Kowalski, 2006; Kuuppelomaki & Tuomi, 2005; McCurren, 1995; Ofi, et al., 2008; Ozsoy & Ardahan, 2008). On the other hand, the study conducted by Kuuppelomaki and Tuomi (2005) with Finland nurses to test their attitudes to nursing research and with the associations of different background factors with these attitudes. The results of this study indicated that 40% of their sampled nurses (n = 400) believe in medical knowledge rather than in nursing knowledge, they said that there is no real impact of nursing research on practice.

Nurses in clinical areas face many barriers to implement research findings into their practice (Kajermo, Unden, Gardulf, et al., 2008; Kuuppelomaki & Tuomi, 2005; Mehrdad, Salsali, & Karemnejad, 2008; Ofi, et al., 2008; Oh, 2008; Tasi, 2000; Veeramah, 2004). Those barriers varying between different countries and from clinical area to another. According to World Health Report on Knowledge for Better

Health (Santesso and Tugwell, 2006), the presence of these barriers especially in developing countries will affect the achievement of the Millennium Development Goals (MDGs) that must be achieved by 2015 mainly due to the lack of human, financial, and informational resources. The World Health Report on Knowledge for Better Health encourages the investment in research on health system and to set knowledge translation as a priority. As a result to the United Nations Millennium Declaration about the importance of bridging the "know-do gap", the Ministerial Summit on Health Research in collaboration with the Global Forum for Health Research was conducted in 2005. The summit involved more than 900 participants from 109 countries. Multiple very important messages about how to achieve the MDGs emerged and the importance of real application of existing knowledge into practice was included (Santesso and Tugwell, 2006).

Additionally, in Geneva in the year 2005, many experts in research met to discuss the concept of knowledge translation and how they can set priorities of global health and strategies for knowledge translation and action (Santesso and Tugwell, 2006).

The Jordanian Nursing Council (JNC) responded to this recommendation by putting the support to scientific research as the most important priority. The JNC considered the determination of best practice as one of the professional responsibilities of the nurses to develop nursing profession (Khalaf, 2010).

Santesso and Tugwell (2006) stated that less than 10% of health research money is spent on diseases affecting developing countries. Furthermore, Carlson and Plonczynski (2008) in their integrative review found no changes in the barriers to RU between the years 1991 and 2006 and that most barriers are related to the characteristics of the organization. Thus, the institutional environment is a key factor in enhancing RU (Khalaf, 2010).Ofi, et al. (2008) conducted a study to investigate the

nurses' knowledge base for research conduct, attitudes toward research and perceived barriers to RU. The study was conducted in Nigeria, on a purposive sample of 500 nurses selected from three tertiary hospitals. Descriptive cross-sectional design was used and data was collected through 41-item-structured questionnaire. The results indicated that the greatest barriers to research utilization are unclear and unreadable research reports and difficulties' in understanding statistical analysis.

On the other hand, Oh (2008) conducted a secondary data analysis from a national mail survey that examined perceptions of barriers to RU among Korean nurses to describe the research activities and identify the barriers to RU. Registered nurses and nurse managers (n = 63) working in critical care units of medical center participated in the survey. The results indicated that not having clear guidelines for clinical implications and lack of time to implement new ideas were the greatest barriers.

Conversely, two studies were conducted in Iran. The first one was a quantitative study conducted by Mehrdad, et al. (2008) to identify the barriers to and facilitators to RU in nursing practice from the view of Iranian nurses. A descriptive design was used and a questionnaire was administered to 410 nurses. The results revealed that the three greatest barriers to RU were no enough time to read research studies, inadequate facilities to implement new ideas, and lack of authority to change procedures. Job position was considered a factor that may affect perceptions of nurses' authority to change practice. Managers don't perceive the lack of authority as a barrier while clinical nurses perceive it as a barrier (Carlson and Plonczynski, 2008).

The second Iranian study was a qualitative study conducted by Salsali & Mehrdad (2009) to explore the major barriers to RU. Face to face several interviews during six months and one focus group were conducted to collect the data. The data were analyzed by using content analysis. The main six themes of the study were: degree of

support nurses need to be research users, extent of nurses' knowledge and skills in RU, levels of educational training involving research, research mindedness, administration and executive challenges in clinical setting and theory-practice gap. All of these themes were considered as barriers to RU. Regarding the degree of support nurses need to be research users, nurses mentioned many barriers. Lack of support in providing equipment, lack of access to information, lack of emotional, organizational, and professional support for conducting and developing nursing research were the most barriers to implement research findings. Regarding the extent of nurses' knowledge and skills to RU, most nurses mentioned that extensive research skills and knowledge are required for RU that was not present (Salsali & Mehrdad, 2009).

Under the theme "levels of educational training involving research", nurses emphasized on the inconsistency between the content of research courses and RU and also on the lack of focus on continuing and in-service education in RU. Under the theme "research mindedness" nurses mentioned that task-centered practice support traditional practice and segregates RU (Salsali & Mehrdad, 2009). Inadequate evaluation policy (RU not incorporated in the evaluation) depresses research-based practice mentioned by nurses under the theme "administration and executive challenges in clinical setting".

In Sweden many studies were conducted addressing RU. A first survey study was conducted by Kajermo, et al. (1998) on 237 registered nurses working in two major hospitals in Stockholm. Kajermo, et al. used the Barriers Scale developed by Funk to investigate the barriers to and facilitators to RU in a group of clinical nurses. Kajermo, et al. found that the major barriers to RU as perceived by Swedish nurses

were insufficient time to implement new ideas, unavailability of research reports and inadequate facilities for implementation of new ideas.

A second survey study was conducted by Kajermo, et al. (2008) in a major research and teaching hospital in Sweden on 833 registered nurses and midwives. Kajermo, et al. used three self-administered questionnaires (the Barriers scale, the Quality Work Competence questionnaire, and the Huddinge University Hospital Model questionnaire) to identify the barriers to RU in clinical settings. Kajermo, et al. found that lack of support from head nurses, unclear and unrealistic purposes for work place, lack of highly educated personnel, and the inclusion of old nurses who did not receive research courses during their education are barriers facing nurses in their practice settings. Additionally, they emphasized that insufficient time to read and implement research findings is the major barrier at all.

The third study was conducted by Bostrom, Kajermo, Nordstrom, and Wallin (2008) by using a cross-sectional survey design. A sample of 210 registered nurses working in care of older people was included in the study and competed the Barriers scale and the Research Utilization Questionnaire. The characteristics of the organization such as lack of adequate resources, lack of time to read and implement new ideas, and lack of support from other staff members were the most identified barriers to RU. Also 66% of nurses perceived English language as a barrier to RU.

Adamsen, Larsen, Bjerregaard, & Madsen (2003) conducted an exploratory descriptive study on 79 Danish clinical nurses to examine the difference between research-active clinical nurses and no research-active clinical nurses. Additionally, to identify the barriers to RU that faced clinical nurses in their practice. The data was collected by a semi-structured interview. Of clinical nurses, 90% perceived the

overwhelming amount of research results as a major barrier to RU. The second barrier is that nurses feel incapable of evaluating the quality of research findings.

Veeramah (2004) conducted a cross-sectional survey by mailing a self-completed questionnaire to 340 nurses and midwife. The response rate was 51%. Large number of respondents reported not understanding statistical analysis as a major factor that preventing the implementation of research findings. Additionally, lack of time to read research reports, and limited access to research reports are considered barriers to RU.

Tsai (2000) conducted a survey study to get a better understanding of nurses' participation in research activities and their research utilization in clinical practice. Tsai found that nurses' participation in research activities was low and 64% of the sample participated only in two research activities which are data collection and presentation at national conferences. The main barriers to RU were lack of time and lack of staff. Tsai found that nurses working in infection control and quality improvement have more tendencies to use research than critical care nurses because their roles are research dependent and highly data-driven.

Carlson and Plonczynski (2008) conducted a literature review in which they indicated that the most frequently cited barrier they found in the reviewed studies was the lack of time to implement new ideas. However, in other studies 62% of nurses disagreed with this situation (Ofi, et al., 2008).

Kuuppelomaki & Tuomi (2005) conducted their study by using a purposive sample of 400 Finnish registered nurses. The data was collected by a structured questionnaire to study the attitudes of nurses toward the application of research results. The main findings were: research remains detached from the practice of nursing, medical knowledge is more important to nurses than nursing knowledge, and doing research is not regarded as a basic part of nursing practice. Similarly, Squires,

et al. (2007) found that the most barriers to evidence-based practice were lack of time, awareness of the evidence, experience in nursing, physician order, nursing beliefs, patient preferences, and the availability of resources and cost.

In a survey study conducted by Parahoo (2000) to identify the barriers to and facilitators for RU, a convenient sample of 2600 nurses in 23 hospitals in Ireland was used, the response rate in this study was 53%. "The nurses do not feel they have enough authority to change patient procedures" and "statistical analysis is not understandable" were the two major barriers identified in this study. Out of the top ten barriers to RU identified by nurses, seven of them were related to organization. Thus, the organizational factors are considered as the greatest barriers followed by communication and dissemination of research studies, the characteristics' of the nurse, and the availability of research studies respectively. Respondents identified two additional barriers when answering the open-ended question asked about a list of additional barriers. These barriers were "senior staff set in their ways" and "low morale".

Hutchinson and Johnston (2004) conducted a survey study on 761 nurses; to elicit nurses' opinions regarding barriers and facilitators of RU. They used the Barriers Scale by Funk, Champagne, Wiese & Tornquist (1991). They found that insufficient time on the job to implement new ideas" as the most perceived barriers to RU as identified by nurses in this study. Additionally, the following barriers were identified among the top ten barriers after the time issue; Lack of awareness of available research reports, insufficient authority to change practice, inadequate skills in evaluating research reports, and lack of support for implementation of research findings. Inadequate facilities, lack of authority to change practice, lack of time, and lack of cooperation from physicians, all of these items related to organizational

characteristics were ranked as the greatest barriers to RU by Chau, Lopez, & Thompson (2008).

In summary, the researchers investigating RU used several research designs and methods of data collection and the sample size ranging from small to large sample size. The reviewed studies indicated that barriers to RU varied between different countries and from clinical area to another. However, the most barriers mentioned in most of the studies were lack of time, lack of resources, and lack of support. It is obvious that all of these barriers were related to the setting regardless of their sequence. However, to be able to achieve the MDGs, nurses must work hard to introduce the evidence-based practice into their clinical areas to achieve better healthcare outcomes with less cost to be able to face the current challenges.

2.4. Facilitators of research utilization

Several studies have investigated and suggested facilitators to RU. Bostrom, et al. (2008) stated that support from unit managers is the greatest facilitator to RU. On the other hand, in Kajermo, et al. (1998) study, nurses mentioned 290 suggestions to facilitate RU. Those suggestions were categorized into five groups; knowledge, communication, resources, support and attitudes, and research. Improving the scientific knowledge of nurses was the most frequently mentioned facilitators to RU beside the availability of "user friendly" reported research. Education in scientific methods, developing skills in searching for appropriate literature, and guidance from knowledgeable colleagues were the most suggested facilitators related to the knowledge. Translation of the articles into understandable language, presenting the results in an understandable way, information about the researches that carried out in their country and the availability of specific scientific nursing journals were the most suggested facilitators related to communication. The time, money and staffing were

the category of resources that the nurses emphasized as facilitators to RU related to resources. Respect from other professionals, and interest, courage, and willingness to carry out changes, and encouragement from managers were the most suggested facilitators related to support and attitudes. More realistic and relevant research closer to reality was the most suggested facilitators related to research. Other studies emphasized the key role that the organization can play to promote research utilization (McCurren, 1995; Kajermo, et al., 1998; Oh, 2008).

Tsai (2000) found that RU can be facilitated through the creation of a "research corner" in each clinical unit for poster display and discussion and presentation of research findings in an open debate. Additionally, Camiletti and Huffiman (1998) clarified that team meeting and allocating sufficient time were effective facilitators to RU. On the other hand, Chau, et al. (2008) found that managerial support, colleague support, and increasing nursing knowledge about research were the three greatest organizational facilitators for RU.

Parahoo (2000) asked an open ended question to identify the facilitators to RU as perceived by registered nurses. The sample included 300 nurses working in different hospital units. The respondents reported 37 facilitators. The researcher carried out content analysis and the common themes emerged were: time, manager's support, funding\resources, support from colleagues, education and training, research presentation, and motivation. Under the theme "education and training" the opportunities for study, study days and continuing education were identified as facilitators for RU (Parahoo, 2000).

The greatest facilitators to RU as identified in Hutchinson and Johnston (2004) included availability of more time to review and implement research findings, availability of more relevant research and colleague support. On the

other hand, Leasure, Stirlen, & Thompson (2008) in their descriptive correlational study identified that the facilitators to RU comprise reading journals that publish original research, establishing a journal club, the availability of a nursing research committee and easy access to the internet. The establishment of small groups three to four staff members with evidence of critical appraisal abilities to review one procedure at a time and this review should be recognized in annual evaluation was also suggested as a facilitator to RU.

In Long (2010) dissertation, the evidence-based practice guidelines developed by the Registered Nurses Association of Ontario (RNAO) in Canada was used to improve the identification and management of women receiving postpartum care in a private obstetrical practice in the United States. These evidence-based practice (EBP) guidelines were operationalized by the use of the Edinburgh Postnatal Depression Scale (EPDS). Upon the implementation of the RNAO Guidelines, 96% of postpartum patients were screened by the EPDS and the number of patients at risk for postpartum depression (PPD) also increased from 4.7% to 11%. The greater facilitator to this success reported was the leadership style of the organization (autonomy), which encouraged role-modeling and increased RU.

2.5. Characteristics of the nurse and research utilization

Most researchers in their studies examined the relationship between the characteristics of the nurse and the use of research in clinical practice. Ofi, et al. (2008), Veeramah (2004), Tsai (2000), and Smirnoff, et al. (2007) found significant relationship between the level of education and RU. In Veeramah (2004) study, the majority of the respondents expressed positive attitudes toward research and stated that this is related to research education they received. Kajermo, Nordstrom,

Krusebrant, and Bjorvell (1998) stated that high percentage of nurses answered "no opinion" to the statement related to the quality of research, and reflected the lack of education in research field. Adamsen, et al. (2003) confirmed that the attendance of research courses and habitual reading of research articles encourages RU. Tsai (2000) found that there is a significant relationship between years of work experience and specialty and RU. Adamsen, et al. (2003), Bostrom, et al. (2008), and Squires, et al. (2007) stated that there is a difference between research active and non research active nurses in their perception to research utilization barriers. The research active nurses perceived fewer barriers than non research active nurses.

Kuuppelomaki & Tuomi (2005) conducted their study in Finland on 400 registered nurses, to assess concerned with the attitude of nurses toward nursing research and the factors associated with these attitudes. The results indicated that age, the frequency of reading research reports, attending research training courses, and type of work place were positively associated with nurses' attitudes toward nursing research.

On the other hand, Oh (2008) stated that there is no relationship between both level of education and attendance at conferences and RU. Furthermore, Smirnoff, et al. (2007) found no significant correlation between age, job title, and having a research course and RU. Chau, et al. (2008) found no significant correlation between age and years of experience with RU.

Horsley (1985) stated that the first step in research utilization is having access to research findings. According to research studies which emphasize barriers and facilitators to RU, the knowledge base about research methodology and statistical analysis is the first step in RU (Ofi, et al., 2008; Smirnoff, et al., 2007; Tsai, 2000; Veeramah, 2004).

2.6. Strategies used to increase research utilization

The first and foremost strategy to increase RU is the identification of barriers and facilitators to RU (Bostrom, et al., 2008). However, Carlson and Plonczynski (2008) stated that the identification of barriers did not enhance nursing practice. This may be due to lack of organizational efforts to overcome the barriers. McCurren (1995) developed four strategies to increase RU. Newsletters and bulletin board is the first strategy used to increase the awareness of the value of research-based practice because it reaches a large audience. The second method is journal club used to encourage the collaboration between the researchers and clinical nurses and to develop some research related skills like interpretation of research results, understanding statistical analysis part. The third strategy is resource consultant and library services by the availability of researches within the clinical area and access to the computer searches. The final method is rewards which used to encourage nurses to implement research findings into their practice.

Veeramah (2004) asked an open-ended question to explore the respondents' views about strategies that encourage the practitioners to implement research findings in their practice. Research education, availability of time to read research articles, communication and discussion of relevant research in clinical area, the availability of internet at work place, the presence of research articles in clinical area, support from the managers, and the employment of clinical research specialist to help staff in the implementation process were the most mentioned strategies. Additionally, Sharp, Pineros, Hsu, Starks, and Sales (2004) found that to overcome the contextual barriers to RU, full-scale assessment is needed before the implementation process started is an effective strategy. Furthermore, the inclusion of quality managers in intervention planning and implementation is crucial to the success of any intervention.

2.7. The actual faced problems during implementation of research findings in clinical areas

Squires, et al. (2007) conducted a cross-sectional survey study on 464 registered nurses to explore nurses' use of eight specific research-based practices, nurses' use and understanding of policies and procedures (P&Ps) and the role of P&Ps in promoting RU. Of the sample 82% reported that they used P&Ps all the time to confirm institutional policy, new and unfamiliar tasks, to make certain that the task is within their range of practice, to clear up disputes regarding the correct way to do a task, and to teach students and orientate new staff. Yet, Squires, et al. (2007) found variability in the nurses' implementation of the identified practices. Similarly, Graham, Logan, Davies, & Nimrod (2004) conducted a qualitative study to explore the factors that influencing the introduction of evidence based health surveillance guidelines for the preferred method of fetal health surveillance for women at low risk. Data were collected by 14 clinician focus groups followed by eight interviews with administrative and nurses educators. Additionally, unit meeting minutes, unit documents, and policy manual were also reviewed. The results indicated that the implementation process was affected by external changes influencing the practice environment, potential adopters, the characteristics of the guidelines, and the strategies used to promote the implementation process. The factors related to external changes were structural changes that preceded the implementation phase, limited financial resources and nursing staff. The factors related to practice environment were unit leadership, policy, availability of equipment, and medical disagreement and support. The factors related to potential adopters were the attitudes of nurses, the ratio of senior to junior nurses, staff education, staff shortage, high use of part-time staff, and habit of relying on electronic fetal monitoring. The factors related to the

guidelines were period of time and the requirements of the staying of nurses in patient's room during procedure. The strategies that were used to promote the implementation were increase physician awareness of the guidelines through presentations at impressive rounds and staff meetings, ongoing training and follow up sessions to junior nurses and staff education (Graham, et al., 2004).

Sharp, et al. (2004) conducted their study to identify the barriers and facilitators to implementation of pilot intervention designed to improve measurements and management of low-density lipoprotein cholesterol (LDL-c) levels in heart disease patients by using the evidence, context, facilitation model of implementation of evidence-based practice. Of the 64 participants, 51 (physicians, nurses, pharmacists, dieticians, quality managers, and other clinical and administrative staff) were interviewed at six facilities in the Veterans Health Administration Northwest Network. The findings of this study reflected that the major barriers to successful implementation were related to the intervention process which included lack of consistency among the teams, lack of leadership abilities in most organizations and there is no process for bringing interventionists together to share ideas and solve problems. The second group of barriers to RU was related to the characteristics of the intervention context which including inadequate support and buy-in for practice change at all levels in the facility and concomitant difficulties obtaining cooperation and resources including the necessary time needed to implement the intervention.

Rejeh, Ahmadi, Mohammadi, Anoosheh, and Kazemnejad (2008) conducted a qualitative study to identify the barriers to and facilitators of post-operative pain management. Data were collected from 26 participants through semi-structured interviews and analyzed by using content analysis method. The barriers to manage pain after surgery were powerlessness of nurses and depend once on physicians'

orders, policies and rules of organization that do not prioritize pain management, physicians' leading, time constraints, limited communication, interruptions of activities related to pain, and insufficient time to interact with patients. On the other hand, the facilitators to pain management post-operatively were the nurse-patient relationship which provided better view of patients' pain, nurses' responsibility, physician as a colleague, and nurses' knowledge and skills.

Similarly, Chou, Tinetti, King, Irwin, and Fortinsky (2005) conducted their study to identify the barriers and facilitators to the implementation of fall risk management by primary care providers. A semi-structured telephone interviews were conducted after at least three months of outreach session in order to give time to implement any new recommendations. Several physicians, logistical and systemic, and physician perceptions of patients' factors were identified as barriers and others as facilitators to the implementation process. The factors related to physicians that are considered as barriers to the implementation process were awareness, priorities and tradeoffs among competing morbidities. The barriers related to the logistical and systemic factors were transportation, time required for immobile patients, reimbursement, and schedule. The availability of other health care providers such as home care nurse and home physical therapist were the facilitators related to the logistical and systemic factors. While the positive feedback is the facilitator related to the physician perception of patient factors. The appropriateness of referrals, training, family reporting and attitude toward medications all of these factors were played as facilitators in some situations and as barriers in other situations in the implementation process.

2.8. Summary and Conclusion

Nurses in their work depend on various types of knowledge and each type is considered as complementary to others. The best type of knowledge is based on

experimental research studies (Upton, 1999). The use of this evidence in clinical areas is difficult and nurses face various barriers to utilizing research findings in the clinical practice settings. Those barriers vary between countries and different settings. The most identified barriers are lack of time, lack of managerial support, lack of authority to implement new ideas the difficulties in understanding of research findings and its statistical analysis, unavailability of research studies in clinical areas and others.

On the other hand, there are several facilitators to RU that the literature revealed. The most frequently cited facilitators were the availability of enough time to read and implement research findings, the availability of managerial support and resources. The most important strategy suggested encouraging RU is the identification of the barriers to RU and the organization effort to overcome those barriers to achieve their goals.

Several studies tried to identify the relationship between RU and the characteristics of the staff. They found strong relationship between the level of education and years of experience which play very important roles in RU.

The majority of these studies used Barriers scale which is not a standardized tool (Kajermo, et al, 2010). Thus, this study will add new items to the Barriers Scale based on literature to explore further barriers and facilitators to RU. According to Khalaf (2010), 97.50% of the research in Jordan was conducted by academicians working in universities and only 1.6% of them were conducted by clinicians.

CHAPTER THREE

Methodology

The main aim of this study was to explore the most common sources of knowledge utilized by Jordanian registered nurses in their practice and to identify the predictors of RU among Jordanian registered nurses. The specific objectives of the study are: to identify the level of RU among Jordanian registered nurses, to explore the barriers and facilitators to RU among Jordanian registered nurses, and to identify the relationship between selected demographics and contextual characteristics, barriers to RU, suggested facilitators to RU and RU.

This chapter presets the research design, setting, sampling and sample size, measurements, ethical considerations, recruitment of sample and data collection, and data management and analysis.

3.1. Research design

A descriptive correlational design was used to answer the research questions of this study. A descriptive design lays the foundation for further and more precise studies (Polit & Beck, 2008). This design is useful to understand the phenomenon under investigation to develop appropriate change strategies (Polit & Beck, 2008). The correlational design is an efficient means of collecting a large amount of data about the problem and discovers a large number of interrelationships in a relatively short amount of time. Correlational design is seldom criticized for its artificiality (Polit & Beck, 2004).

3.2. Setting

3.2.1. Description of healthcare system in Jordan

The healthcare system in Jordan consists of two sectors; the public health sector and the private health sector.

A- The public health sector: includes:

1- The Ministry of Health (MOH): is the biggest organization in terms of provision of health services. The MOH provides primary, secondary and tertiary health care services by 3036 registered nurses working in 30 hospitals in 12 governorates with 4,235 hospital beds, representing 38 percent of total hospital beds in Jordan (MOH, 2009).

2- The Royal Medical Services (RMS): is accountable for providing health services for military personnel and their families. The RMS provides mainly secondary and tertiary healthcare services. It runs 11 hospitals (6 general and 5 specialized) with a capacity of 2,119 beds, accounting for 19 percent of hospital beds (Halasa, 2008)

3- The teaching hospitals:

- a- The teaching university hospital in Amman: It is one of the most expert and highly technological medical centers in the public sector, with over 531 beds.
- b- The other teaching university hospital is in Irbid: It is a teaching hospital and a referral hospital to the public sector in the Northern region. The total bed capacity of the hospital is 650 beds (Halasa, 2008).

B- The private health sector: The private sector accounts for 34 percent of hospital beds with occupancy rate of 46.2 percent (MOH, 2009).

3.2.2. Selecting the settings

To ensure availability of adequate number of nurses for sampling purposes, only hospitals with bed capacity of 150 or more were selected. Therefore, the selected hospitals included six public hospitals (five from MOH and one teaching hospital) and four private hospitals. Permission from the RMS and the other teaching hospital could not be obtained.

3.3. Sampling and Sample Size

The population of interest was Jordanian registered nurses who were working at the different Jordanian healthcare sectors. The total number of registered nurses working at different healthcare sectors in Jordan is 12759 (MOH, 2009). Most of those nurses are baccalaureate prepared, graduated from Jordanian universities, the remaining are graduates of the three years diploma program.

The sample size was calculated based on computer program "Creative Research Systems Survey Software Calculator" by using confidence level equal to 95% and confidence interval equal to 5, the required sample was 373 registered nurses. The confidence level is the probability value (1- α) associated with a confidence interval. The 95% confidence level means that the researcher can be 95% certain. While a confidence interval (CI) is a particular kind of interval estimate of a population parameter and is used to indicate the reliability of an estimate (Polit & Beck, 2008).

Because the response rate to self-report questionnaires is known to be low (Waltz, Strickland, & Lenz, 2005), the sample size was duplicated to become 746. Additionally, the sample size was increased to obtain more precise results, compensate the suspected incomplete questionnaires, and to strengthen the power of the study (Polit & Beck, 2008).

A Quota was used to recruit the required number of registered nurses from each sector in proportion to the number of nurses in that sector. A quota method was used to enhance the sample's representativeness and increases the generalizability of the results (Polit & Beck, 2004). To determine the number of registered nurses to be recruited from each sector, the percentage of nurses working in each sector were determined. The number of nurses to be included from each sector was then determined in proportion to its representation in the target population.

There are 3036 registered nurses working in MOH who form 23% of total number of registered nurses. In RMS there are 2335 nurses who form 18% of total number of registered nurses. The number of registered nurses working in the two teaching hospitals is 1000 which form 10% of total number of nurses. The number of registered nurses working in the private hospitals is 6388 which equal to 50% of all registered nurses (MOH, 2009). The number of nurses to be recruited from each sector was as shown in Table 1.

The identified number of nurses from each sector was selected using the convenient sampling procedure. Because one of the three major public branches did not give permission to collect data from its hospitals, the total number of the sample was reduced to 615 (746-131). The inclusion criteria were: Jordanian registered nurses working in hospitals as clinical nurses and nurses in management positions at the unit\ department level. The exclusion criteria were: being a registered nurse working at primary health care center was excluded because healthcare centers are providing outpatient services only. The associate and assistant nurses working at hospitals also excluded. Additionally, the nursing managers (directors of nursing services) were excluded because most of organization subscales ask about their attitudes toward RU and to prevent social desirability responses and that they did not provide direct nursing care.

A probability value of 0.05 on two tailed was accepted as the level of statistical significance, the estimated effect size was medium effect size of 0.15 (appropriate for descriptive studies) and a statistical power is 0.80 (Tsai, 2000).

Table 1: sample size from each healthcare sector

Health care sector	# of nurses in each sector	% of nurses in each sector	# of nurses to be included
Public sector: 1-Ministry of Health	3036	23%	170
2-Royal Medical Services	2335	18%	131
3- Teaching hospital	1000	10%	71
Private sector	6388	50%	373
Total	12759	100%	746

3.4. Measurements

3.4.1. The instrument

Since there was not pre designed questionnaire to be used to answer the questions of this study. Therefore, the researcher created two sections (Demographic and contextual characteristics data form, Facilitators to RU Scale) of the tool and adopted and modified the other three sections and referred to it as "Exploring Theory-Practice Gap Questionnaire" or "ETPGQ" (Appendix B).

The Exploring Theory-Practice Gap Questionnaire is a self-administered questionnaire consisting of five sections: demographic and contextual characteristics data form, research activities, barriers to RU scale, facilitators to RU scale, and sources of knowledge questions.

The cover letter was attached with the questionnaire (Appendix A). This cover letter includes information about the purpose and significance of the study, and statements that participation is voluntary and to freedom to withdraw at any time. And that response will be treated confidentially by replacing the participants' names by

serial ID numbers considered. Also the phone number of the researcher was written to answer all questions that might look ambiguous or unclear to the participants.

3.4.2. Description of the instrument

The instrument is composed of five sections; Demographic and Contextual Characteristics Data form, Research Activities Section, Barriers to RU Scale, Facilitators to RU Scale, and Sources of Knowledge Questions.

Section one: Demographic and contextual characteristics

This section consists of 24 items related to the demographic and contextual characteristics of the participants. Most of the items in this section were developed by the researcher based on revision of various research studies and recommendations mentioned in several other research studies (Adamsen, et al., 2003; Kuuppelomaki & Tuomi, 2005). Some of those items were added by the expert panel. Demographic characteristics included were: age, gender, marital status, level of education, years of experience and position. The contextual characteristics which considered affecting RU include items from 9 to 24. These demographics and contextual characteristics have been found to be significant in some literatures and not significant in others in relationship with barriers and facilitators to RU.

Section two: Research Activities Section

Because there is no pre designed tool to measure the level of RU, the researcher adopted this section from Polit & Beck (2008) book to meet this purpose. This section consists of two questions. The first one asked the participants if they shared in any research activity or not. If they answered "yes", they can move to the second question which consists of a table listing ten research activities (item 25-26). If the registered nurse participated in any of these research activities he\she would answers "Yes" beside these items and if not participated he\she would answer "No".

Section three: Barriers to RU Scale

This scale consists of 38 items related to barriers to RU. Most of its items are based on the Barriers Scale (Funk et al., 1991) (with permission, Appendix C) and on review of literature (Mehrdad et al., 2008; Funk, Tornquist, & Champagne, 1995; Ofi et al., 2008; Salsali & Mehrdad, 2009; Gerrish et al., 2007). Item 2, 6, 12, 13, 29, and 34 are adopted as they are in Funk's Barriers scale. The other items including 3, 4, 5, 7, 8, 9, 14, 15, 17, 18, 19, 28, 30, 33, 35, 36, and 37 are rephrased to be more understandable and clearer and to be adherent to Arab culture. Items 1, 10, 11, 16, 20, 21, 22, 23, 24, 25, 26, 27, 31, 32, and 38 derived from Mehrdad et al. (2008), Salsali & Mehrdad (2009), and Gerrish et al. (2007).

Respondents' are required to rate each item in the "Barriers to RU scale" as a barrier to RU by using a 5-point Likert like scale ranging from one "strongly disagree" to five "strongly agree".

Section four: Facilitators to RU Scale

This scale was developed by the researcher; it consists of 20 items related to facilitators to RU. All of them were based on reviewing the relevant literature including Gerrish et al. (2007) and Mehrdad et al. (2008). Items 1, 5, 6, 7, 8, 9, 14, and 18 were adopted from Meherdad's, et al. study (Mehrdad, et al., 2008).

Respondents' are required to rate each item in the "Facilitators to RU scale" on a 5-point Likert like scale ranging from one "strongly disagree" to five "strongly agree".

Section five: Sources of knowledge questions

This questionnaire consists of 21 questions related to sources of knowledge that may be utilized in practice. The first 16 items totally adopted from Estabrooks' sources of knowledge questionnaire (Estabrooks, 1999) (with permission, Appendix

D) and other items derived from the literature (Gerrish et al., 2007; Ozsoy & Ardahan, 2008), others were based on researcher long personal clinical experience.

Respondents are required to rate each item in "Sources of practice knowledge section" using a Likert like scale ranging from one "never" to five "always".

3.4.3. Reliability and Validity of the Arabic version of the questionnaire

The Exploring Theory-Practice Gap Questionnaire was designed in English because all of its items were derived from research studies written in English. The questionnaire was tested for face and content validity by an expert panel composed of five members, one of them is full professor in nursing and the other four are associate professors in nursing. All the comments of the expert panel were taken into consideration and the questionnaire was rectified accordingly. Several new items were added, paraphrasing to some items was done, and one item was deleted. The final version of the questionnaire was approved by supervisor, co-supervisor and the five members of the expert panel.

The questionnaire was translated to the Arabic language and the Arabic version was back translated into English again by the research and linguistic oriented person. The back translation was compared with the original text and the modifications were done accordingly.

A pretest of the final Arabic version of the questionnaire was conducted through the pilot study on a total number of 20 registered nurses from two private hospitals that were not included in the original study (bed capacity less than 150). Piloting was done to assess the feasibility of the study, provide data about recruiting the subjects, and clarity of the questionnaire. Also to check for understanding, time required for filling the questionnaire, and to test the psychometric prosperities of the questionnaire.

The characteristics of the sample included in the pilot study were as follow: their ages ranged from 23 to 49 years and are Registered Nurses (RNs) for 5 months to 35 years. Eighteen of the twenty RNs hold a baccalaureate degree, the remaining two hold three years diploma. They worked in different units and departments at the two selected hospitals.

The analyses of the data from the pilot study was performed by using the Statistical Package for the Social Sciences (SPSS) version 16.0.The results of the pilot study showed that all the 20 registered nurses found the items of the questionnaire were clear and easy to understand except item number 11 in section five of the questionnaire. Item 11 which is "what has worked for me for years" was rephrased and clarified. The average time required to answer the questionnaire was 20 minutes.

Psychometric proprieties of the Arabic version of the questionnaire were tested by using SPSS version 16. Cronbach's alpha for the total questionnaire except section one was 0.90. Cronbach's alpha for the research activities scale was 0.90, for the total Barriers Scale was 0.91, for the total Facilitators Scale was 0.93, and for the total Sources of Knowledge Questions was 0.88. Cronbach's alpha for each subscale in the Barriers and the Facilitators scales were calculated and illustrated in table 2, indicating acceptable internal consistency and reliability in all subscales (Waltz, et al., 2005).

Table 2. Reliability index of ETPGQ and its subscales.
N = 20

Scales	No. of Items	Cronbach's alpha reliability
ETPGQ questionnaire	79	0.90
Barriers to RU scale	38	0.91
Facilitators to RU scale	20	0.93
Sources of practice knowledge scale	21	0.88
Research activities	11	0.90
Barriers (Adopter factors)	10	0.83
Barriers (organization factors)	17	0.84
Barriers (research factors)	4	0.72
Barriers (communication factors)	7	0.72
Facilitators (Adopter factors)	3	0.89
Facilitators (organization factors)	10	0.86
Facilitators (research factors)	4	0.86
Facilitators (communication factors)	3	0.75

3.4.4. Scoring of the questionnaire

Scale scores were calculated for each subscale in section three and four by averaging of the individual's scores on the items for that subscale. Thus, the appropriate divisor for the mean is the number of items in that subscale (Funk, et al., 1991).

3.5. Ethical Consideration

The permission of Professor Funk to adopt or modify some items of the Barriers Scale (Funk et al., 1991) was taken. The permission of Estabrooks to use the "sources of practice knowledge questions" and to do some modifications was also taken.

The approval to recruit the participants in the pilot study was obtained from the Scientific Research Committee at the Faculty of Nursing, University of Jordan and Institutional Review Board (IRB) of the selected hospitals. Additionally, ethical approval to conduct the study was obtained from IRB at the University of Jordan, MOH, teaching and private hospitals. Once a participant was identified, the researcher provided adequate information about the significance and purposes of the study. Participants were assured that participation is voluntary. In addition, they were told to

feel free to withdraw at any time. Furthermore, the participants were instructed that their completion of the questionnaire will be considered a written consent for their participation. And that the information will be used only for the purposes of this study. Participants also were assured that their responses will be treated confidentially by replacing the participants' names by serial ID numbers. Additionally, information that might reveal their identity will not be recorded and only aggregated data will be communicated.

All completed study questionnaires and the software of the study were saved in locked files, where no unauthorized persons can reach them.

3.6. Data collection

The recruitment process of the sample began in November 2010 and continued through March 2011.After obtaining the ethical approval from the Scientific Research Committee at the Faculty of Nursing, the University of Jordan, and data collection proceeded as follows:

- Formal letters were sent to the Minister of health, Director of the RMS, the directors of the two teaching hospitals, and the directors of the selected private hospitals, seeking approval for conducting the study. Approvals were gained from the MOH, one teaching hospital, and four private hospitals. No approval was gained from the RMS, one of the teaching hospitals, and one of private hospitals.
- The researcher contacted the nursing administrators of each selected hospital to clarify some issues related to the study. The major purpose of the study, the method of data collection, the required time to fill the questionnaire, and the number of registered nurses required from the institution were clarified.

Finally, an appointment from unit and department managers to start data collection was obtained.

- Then each unit and department manager in each hospital was met separately. The researcher discussed the purpose of the study and gave a brief description about the study to her/him and asked her/him for participation and discussed the best way to approach the nurses and at the same time not to disturb the work. The unit managers then helped in preparing the list of nurses' names. Nurses were screened for eligibility to participate. All unit\department managers were asked to fill a copy of the questionnaire.
- Nurses who met the criteria were provided with the package which included the cover letter and a copy of the questionnaire. A total of 615 packages were distributed. Participants were asked to return the questionnaires back to the unit/department manager within one week. The researcher contacted each unit/department manager several times weekly through the telephone to check the process of the completion of the questionnaires. Data were collected over a five months period.
- The completed questionnaires were coded for analysis and kept in envelops.

All the 615 registered nurses who met the inclusion criteria and took the package reflected willingness to participate. However, of the distributed packages, 16 were not completed and 60 were not returned. The response rate was 87.6%.

3.7. Data management and analysis

Data from the ETPGQ were coded manually using the corresponding codebooks as a guide (Polit & Beck, 2008). Written responses from the descriptive and open ended questions were grouped accordingly and coded. All data were entered into the SPSS database Version 16.0 and reviewed extensively for any entry errors by the

researcher herself. To overcome the missing data problem, each questionnaire was checked for completeness when received from the unit\department manager, if there is any missing data, the researcher asked the respondent to complete it. Then the data was screened, cleaned and the missing data were replaced with the mean or median or mode according to its type. The information that was obtained from respondents on open-ended questions were analyzed by using content analysis and clustered into meaningful groups. Responses then were coded based upon the cluster to which they were assigned.

Means, standard deviations, frequencies, and actual ranges of all major study variables were examined prior to the analysis of research questions. All independent variables were checked for multicollinearity (high correlation, $r \geq .90$) to test clearly the contribution of each variable to RU (the dependent variable). Data distribution was examined for normality. For categorical data (open-ended questions) that were missing, no information was substituted. Total scores of barriers (38 items) and facilitators (20 items) to RU were calculated as a sum of these items. Data was analyzed using the SPSS, version 16.0 (Chicago, IL, USA). SPSS is a powerful computer program commonly used to perform data analysis.

In analyzing the data, the descriptive and inferential statistics were performed. Descriptive statistics (means, standard deviations and ranges) were used to describe the following variables (age, years of experience, total scores of barriers to RU, and total scores of suggested facilitators to RU). Additionally, frequencies and percentages were used in other demographics including gender, marital status, level of education, job title and other recorded contextual variables affecting RU (included items 9 to 26 except item 18). The fifth section of the questionnaire included 21 sources of knowledge used by registered nurses in their practice and these items were

analyzed using frequencies and percentages to identify the most and least used sources of knowledge used. Responses under "always" and "frequently" were combined because the results were fragmented between the two choices.

Pearson's product moment correlation coefficient (r) was used to examine the relationship between barriers to RU, suggested facilitators to RU and age. Additionally it was used to examine the relationship between barriers to RU, suggested facilitators of RU and other demographics including gender, marital status, level of education, and job title and other recorded contextual variables and RU (included items 9 to 26). The total scores of the table in item 18 was calculated which asked about research activities to reflect RU to identify the level of RU. Independent variables that were significantly correlated with the dependent variable (RU) were introduced in the regression analysis to yield predictors of RU. The qualitative information that was obtained from respondents on open-ended items were analyzed and clustered into meaningful groups. Responses then were coded based upon the cluster to which they were assigned to conclude the major barriers and facilitators to RU.

3.8. Summary

This chapter provided a description of the design and methods used in this study. A convenience sample of 615 Jordanian registered nurses working in the selected hospitals was used for data collection. A self-administered questionnaire was used, which consists of five sections: demographic and contextual characteristics, research activities section, Barriers to RU scale, suggested facilitators to RU scale, and sources of knowledge section. Results of the study are presented in the next chapter.

CHAPTER FOUR

Results

The main aim of this study was to explore the most common sources of knowledge utilized by Jordanian registered nurses in their practice and to identify the predictors of RU among Jordanian registered nurses. The specific objectives of the study are: to identify the level of RU among Jordanian registered nurses, to explore the barriers and facilitators to RU among Jordanian registered nurses, and to identify the relationship between selected demographics and contextual characteristics, barriers to RU, suggested facilitators to RU and RU.

This chapter presents the results of the data analysis guided by the following five research questions.

1- What are the most common sources of knowledge used by Jordanian registered nurses to guide their practice?

2- To what extent do Jordanian nurses' utilize research findings in their clinical practice?

3- What are the barriers and suggested facilitators to RU among Jordanian registered nurses to implement research findings into their practice?

4- Is there a relationship between demographic characteristics, contextual characteristics, barriers to RU, suggested facilitators to RU and RU among Jordanian nurses' into clinical practice?

5- What are the predictors to RU among Jordanian registered nurses?

4.1. Demographic characteristics of the sample

539 questionnaire responses were analyzed for demographic characteristics and other questionnaire responses. Demographic characteristics of participating nurses presented in Table 3, revealed that of the five hundred and thirty nine nurses; three

hundred and eight were male (57%) and two hundred and thirty one were female (43%). Study participants had a mean age of twenty nine years (SD = 6.85) and ranged from twenty one to fifty nine years old. Two hundred and ninety seven (55%) of the sample were married. The highest percentage of participants were Baccalaureate Degree 81% (n = 437). The average years of experience in nursing was 7.08 years (SD = 7.1). Years of nursing experience ranged from one year to thirty nine years.

Table 3: Description of demographic characteristics of the sample. N=539

Characteristic	Frequency	(%)
Gender		
Male	**308**	**57%**
Female	**231**	**42.9%**
Years of experience in nursing		
1-10	**415**	**76.9%**
11-20	**97**	**18%**
21-30	**22**	**4%**
>30	**5**	**1%**
Level of education		
Diploma 3 years	**56**	**10%**
Baccalaureate	**437**	**80.9%**
Master	**46**	**9%**
Marital status		
Single	**233**	**43%**
Married	**297**	**54.9%**
Divorced	**7**	**2%**
Separated	**2**	**0.4%**

4.2. Contextual characteristics of the sample

Of the 615 questionnaires distributed, 555 were returned. Sixteen questionnaires were incomplete and were not considered in the analysis of data. This yields a response rate of 87.6%. The analysis of contextual characteristics of the sample, as shown in Table 4, reflects that two hundred and ninety two (54%) of the sample is working in private hospitals, while one hundred and seventy seven (32%) were working in MOH and only seventy (13%) were working in the teaching hospital. Of

the sample, 48% are working in medical and surgical departments, 42% in critical care units, 3% in managerial positions, 3% in education units and 4% in infection control and\or quality unit. 75% of the sample was work as bed side nurse. Fifty five percent (n = 297) of the sample never participated in any research activities. Of those who participated in a research activities, 20% indicated that their participation was limited, being subjects in research studies and 12% participated in data collection and only 7% (n = 30) worked as principal investigator. 44% of the sample never attended any scientific nursing conferences and 47% of the sample attended between one to five conferences. 5% of the sample has published articles between one to five and only those who had published articles presented in scientific conferences.

Only 59 (11%) of the sample received research training other than what they received during university or college education and the training were conducted mostly by universities faculty members and non profit institutions such as JNC and Jordan Nurses and Midwifery Council (JNMC) (4.7%) and private hospitals (4%). Of the sample, 61% (n = 331) mentioned that they never read research articles. About the presence of a library in the participants' institutions, 85% (n = 456) of them answered yes, but 71% (n = 381) of the sample reported that they never visited it. Additionally, they were asked about the availability of an internet in their institutions, 76% (n = 411) of them mentioned that there is an internet in their institutions and 98% (n = 527) reported that never used it to search about research articles or to read research studies.

Table 4: Description of the sample in relation to contextual characteristics. N=539

Characteristics	*Frequency*	*(%)*
Current area of practice (hospital)		
Private hospitals	**292**	**54%**
MOH hospitals	**177**	**32%**
Educational hospitals	**70**	**13%**
Current area of practice (unit\department)		
Critical care units	**226**	**42%**
Medical surgical	**262**	**48%**
Unit/department manager	**14**	**3%**
Education department	**18**	**3%**
Infection control and\or quality department	**19**	**4%**
Job title		
Bed side nurse	**405**	**75%**
In charge nurse	**52**	**10%**
Clinical instructor	**23**	**4%**
Unit/department manager	**48**	**9%**
Others	**11**	**2%**
Participants who conducted research studies (participated as principal investigator).	**30**	**7%**
Attended conferences during nurses work years		
Never attended	**234**	**44%**
1-5	**255**	**47%**
> 5	**50**	**9%**
Nurses have published work or accepted work for publication	**25**	**5%**
Number of published works		
1-5	**24**	**4.6%**
> 5	**2**	**0.4%**
Have presentation in a scientific conferences		
Yes	**25**	**5%**
Never	**514**	**95%**
Received research training other than that received during university or college education.	**59**	**11%**
How often do nurses read research articles	**60**	**11%**
Several times\week	**148**	**28%**
Several times\month	**331**	**61%**
Never		
Is there a library in your institution?		
Yes	**456**	**85%**
No	**83**	**15%**
How often nurses are visited the library?		
Several times\week	**35**	**6%**
Several times\month	**42**	**8%**
Never	**381**	**71%**
Nurses have access to the internet in their institutions.	**411**	**76%**
How often nurses are use the internet?		
specific hours per week	**12**	**2%**
Never used it	**527**	**98%**

4.3. Research questions

4.3.1. Question one

The first research question was: "What are the most common sources of knowledge used by Jordanian registered nurses to guide their practice?" Frequencies and percentages for each source of knowledge were calculated. The percentages of both "always" and "frequently" were combined to represent the most utilized sources of knowledge.

Table 5 provides a complete description of the sources of knowledge utilized by nurses to guide their practice. The top five ranked sources used by Jordanian registered nurses include: the information that nurses learned during nursing education (76%), personal experience in nursing over time (69%), what was learned through providing care to patients (66%), information gained through discussion between physicians and nurses about patients (61%), and information from policy and procedure manuals (61%).

On the other hand, the five least utilized sources of knowledge were: published articles in nursing research journals (31%), published articles in nursing journals (33%), published articles in medical journals (34%), information from local audit reports (36%) and activities of nursing foundations in specific branches (37%).

Table 5. Rank order of the sources of knowledge utilized by nurses to guide their practice N= 539

Rank	sources of knowledge	*Frequency)*	*(%)*
1	Information learned during nursing education	410	76%
2	Personal experience in nursing over time	373	69%
3	What learned through providing care to patients /clients	357	66%
4	Information from policy and procedure manuals.	330	61%
5	Discussion between physicians and nurses about patients	329	61%
6	Courses specific only to specific departments.	321	60%
7	Information from attending in-services training programs/ conferences.	316	59%
8	Information from medication leaflets'.	311	58%
9	Information in textbooks.	308	57%
10	The information shared between nurses.	301	56%
11	New therapies & medications described to patients by physicians.	299	56%
12	The ways that nurses always did it.	296	55%
13	Information senior clinical nurses share.	289	54%
13	What has worked for nurses for years?	269	50%
14	Information from the media (e.g., popular magazines, television, the Internet, etc).	249	46%
15	Intuition's regarding what seems to be "right" for patients.	230	43%
16	Activities of nursing foundations in specific branches.	201	37%
17	Information from local audit reports.	192	36%
18	Published articles in medical journals.	185	34%
19	Published articles in nursing journals.	180	33%
20	Published articles in nursing research journals.	167	31%

*** Note: Some respondents selected more than one source**

4.3.2. The extent of RU among Jordanian registered nurses

Table 6 provides a complete description of research activities nurse practices in clinical setting. The mean of the level of RU in clinical settings is 0.18 (SD = 0.25, range 0-1) which indicates inadequate RU depending on the items that related to RU in the above table (item 4, 5, 6, 8). The table shows that the participants were engaged in the following research activities which arranged in descending order: attending research presentation (58%), giving clients information and advice about participation in studies (28%), and assisting in data collection (26%). While the research activities that had the least participation from the sample are as the following: discussing the implications and relevance of research findings to clients (18%), evaluating completed research for its possible use in practice (16%), collaborating in the

development of an idea for a clinical research project (14%), participating in a journal club and regular meetings to discuss and critique research articles (13%), reviewing a proposed research plan (12%), and participating in the implementation process of new research findings (12%).

Table 6. Rank order of research activities practiced by nurses in clinical setting. N=539

Characteristic	*Frequency*	*(%)*
1- Attending research presentations at professional conferences.	311	58%
2- Giving clients information and advice about participation in studies.	149	28%
3- Assisting in data collection.	141	26%
4- Participating in the implementation process of new research findings.	101	19%
5- Discussing the implications and relevance of research findings with clients.	98	18%
6- Evaluating completed research for its possible use in practice.	84	16%
7- Collaborating in the development of an idea for a clinical research project.	75	14%
8- Participating in a journal club and regular meetings to discuss and critique research articles.	69	13%
9- Participating in institutional committee that reviews the ethical aspects of proposed research before it is undertaken.	64	12%
10- Reviewing a proposed research plan.	63	12%

4.3.3. Question three

The third research question was: "What are the barriers and suggested facilitators to RU among Jordanian registered nurses to implement research findings into their practice?

Barriers to research utilization among Jordanian registered nurses

The total scores of items in each subscale were calculated and then divided by the number of items under each subscale to elucidate the mean subscale which ranges from 1 to 5. The higher mean indicates greater barrier (Table 7).Accordingly, the most reported barrier was organization characteristics (M = 3.52, SD = 0.70), followed by research characteristics (M = 3.36, SD = 0.68), communication characteristics (M = 3.31, SD = 0.66), and nurse characteristics (M = 3.06, SD = 0.76) respectively.

Table 7. Description of barriers to RU among Jordanian nurses according to subscales

Barriers Subscale	*Mean*	*Standard deviation*
Nurse characteristics	3.06	0.76
Organization characteristics	3.52	0.70
Research characteristics	3.36	0.68
Communication characteristics	3.31	0.66

Regarding overall barriers to RU, total scores of each item at the barriers scale was calculated and then divided by 38 (total number of items indicated in barriers scale) to conclude the mean score of each item (Table 8). The mean score of the barrier scale is 3.34 (SD = 0.57); the items that scored this mean and above were considered the greatest barriers and the items that scored lower than the mean of the barrier scale were considered mild barriers. Accordingly, there are twenty one items ranked as greatest barriers and the remaining seventeen items were ranked as mild barriers. The top five barriers based on ranking of mean scores were related to organizational characteristics as follows: the first one is routines in providing nursing care dominate (M = 3.92), the second is lack of consistency between education and practice in nursing discipline (M = 3.88), the third is lack of organizational and administrative motivation for its employee to do research (M = 3.83), the forth is the nurse is too busy providing patient care and has no time to read research reports or studies (M = 3.72), and the fifth is the shortage of staff nurses hinders the implementation of new evidences (M = 3.69). The barriers related to the research, communication, and nurse characteristics as shown in table 7 received lower scores (M = 3.66-2.68).

When the participants were asked to rank the top three barriers in an open-ended question, 41% of them chose not to rank barriers, while 59% of the sample ranked the

first barrier only. After analyzing those barriers that ranked as first barrier, the following are the greatest three barriers chosen by the participants: lack of organizational and administrative motivation for its employee to do research, the nurse is too busy providing patient care and has no time to read research reports or studies, and nurse is dissatisfied with nursing profession. Of the sample, 57% ranked the second barrier as follows: routine in providing nursing care dominate, followed by lack of organizational and administrative motivation for its employee to do research, and the next two barriers yielded a tie result. These two were" There is insufficient time on the job to implement new evidences" and " There are insufficient resources (e.g. equipment) in the clinical areas to help in implementing research findings". Additionally, 53% of the sample ranked the third barrier. After analyzing those barriers that ranked as third barrier, these were: routine in providing nursing care dominate, followed by lack of organizational and administrative motivation for its employee to do research, and the nurse is too busy providing patient care and has no time to read research reports or studies. Because there is a repetition in some barriers, the researcher can conclude that the following are the three greatest barriers: lack of organizational and administrative motivation for its employee to do research, routine in providing nursing care dominate, and the nurse is too busy providing patient care and has no time to read research reports or studies. All of these three barriers are organizational factors.

In response to the open-ended question that read, “Can you think of other barriers to utilization of nursing research that were not mentioned in this questionnaire and you would like to add to the list? If so, please list them and use the same rating scale to rate them", the following items were added. The first one is that the nurses work under doctors orders and there is no role to nurses in the decision making process in

providing the care to patients. The second is low confidence in healthcare providers other than doctors. The third is nurses' inability to determine the appropriate researchable problem. Finally, nurses lose their enthusiasm as a result of the community bad impression about the nursing profession.

Table 8: Barriers to RU, Rank Ordered by means

Rank	IC	Barrier	Mean
1	O	Routines in providing nursing care dominate	3.92
2	O	Lack of consistency between education and practice in nursing discipline.	3.88
3	O	Lack of organizational and administrative motivation for its employee to do research	3.83
4	O	The nurse is too busy providing patient care and has no time to read research reports or studies.	3.72
5	O	The shortage of staff nurses hinders the implementation of new evidences.	3.69
6	C	The nurse is not informed about available nursing research studies.	3.66
7	O	Other staff nurses are not supportive to implementing new evidences.	3.61
8	O	Unavailability of internet access in the unit or department where I work	3.59
9	N	The nurse is unaware of the available studies in their country.	3.58
10	O	There is insufficient time on the job to implement new evidences.	3.578
11	C	Reports usually have unclear applications for nursing practice.	3.54
12	O	There are insufficient resources (e.g. equipment) in the clinical areas to help in implementing research findings	3.54
13	O	Lack of enough authority to change patient care procedures according to research findings.	3.54
14	N	Lack of collaboration between academic nurses and practitioners.	3.53
15	C	Research articles are not readily available in clinical areas.	3.51
16	O	Job description does not include statements that mandate participation in efforts or activities to change practice.	3.50
17	R	The nurse is doubtful about the results of the research study or reports.	3.46
18	O	There are difficulties to obtain new instruments that may be needed to implement research findings.	3.45
19	R	The research study or report has not been replicated to be confidently used to change practice.	3.40
20	O	Administrators and decision makers lack interest in identifying better ways of do things.	3.35
21	C	Statistical analysis is unclear and difficult to understand.	3.34

Table 8: Barriers to RU, Rank Ordered by means			
22	N	The nurse lacks the skills to find appropriate research studies.	3.32
23	O	The nurse feels that research results are not applicable to their clinical areas.	3.31
24	R	The amount of research reports or studies is overwhelming.	3.30
25	R	The literature reports contain conflicting results.	3.27
26	O	Years of experience without any evidence of participation in research activities are enough for nurses to gain high executive posts.	3.25
27	N	Nurse is dissatisfied with nursing profession. Therefore, she/he doesn't have enthusiastic to improve it.	3.24
28	O	Administrators would not allow the implementation of new evidences.	3.19
29	C	Nurses have English language problems because it is not their first language and most research reports are written in English.	3.15
30	C	The research reports are not clearly written or unreadable.	3.05
31	N	The nurse lacks the capability to evaluating the quality of research articles.	2.97
32	O	Administrators prevent nurses from using the library and the internet.	2.93
33	C	Conducting research being only relevant to nursing educators not to clinical nurses.	2.92
34	N	There is no documented need to change nursing practice.	2.90
35	N	Nurse does not see the value of research in their practice.	2.83
36	N	The nurse doesn't like to change the traditional way of work.	2.78
37	N	The nurse sees reading and implementing research findings to have little advantage to self development.	2.72
38	N	The nurse feels the benefits of changing practice will be minimal to patients.	2.68
The mean score of the total scale is 3.34 (SD = 0.57)			
Key	**IC – Item Characteristic, O –Organization, C – Communication, N – Nurse, R - Research**		

Suggested facilitators to research utilization among Jordanian registered nurses

The total score for each subscale was calculated and then divided by the number of items under each subscale for the mean of each subscale; a higher mean indicates a greater suggested facilitator (Table 9). Thus, the top mean scores were the nurse characteristics (M = 4.23), the organization characteristics (M = 4.14), research

characteristics (M = 4.09), then communication characteristics (M = 4.00) respectively.

Table 9. Description of suggested facilitators to RU among Jordanian nurses according to subscales

suggested facilitators subscales	*Mean*	*Standard deviation*
Nurse characteristics	4.23	0.74
Organization characteristics	4.14	0.74
Research characteristics	4.09	0.75
Communication characteristics	4.00	0.77

Additionally, the total score for the suggested facilitators to RU scale was calculated for the total sample and then divided by 20 (the number of items in this scale) to calculate the mean score for the suggested facilitators. The mean score for the facilitators scale is 4.12. Items gaining the mean score and above were considered the greatest suggested facilitators and items with scores lower than the mean were considered mild suggested facilitators. Accordingly, there are twelve items ranked as greatest facilitators and the remaining eight items were ranked as mild facilitators. The top five suggested facilitators based on ranking of mean scores were: the first one is opportunity and time to attend and participate in national and international nursing conferences (M = 4.24), the second is creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice (M = 4.23), the third is having computer skills to allocate research reports (M = 4.22), the forth is develop policy and procedures that support change of practice and use of new evidences (M = 4.20), and finally, providing facilities and resources that promote access to research reports (M = 4.19). The other suggested facilitators with lower scores are presented in table 10.

When the participants were asked to rank the top three suggested facilitators, 46% of the participants chose not to provide a response, while 54% of the sample ranked the first suggested facilitator. After analyzing those suggested facilitators, the

following were the greatest three chosen by the participants: possessing skills in English language (reading and comprehension), followed by enhancing administrative support and encouragement for change by developing rewarding system and

Table 10. Suggested facilitators to RU in rank order by means

Rank	Related subscale	Facilitator	Mean
1	Organization	Opportunity and time to attend and participate in national and international nursing conferences.	4.24
2	Nurse	Creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice.	4.23
3	Nurse	Having computer skills to allocate research reports.	4.22
4	Organization	Develop policy and procedures that support change of practice and use of new evidences.	4.20
5	Organization	Providing facilities and resources that promote access to research reports.	4.19
6	Organization	Allocate financial resources to support research capacity building activities and to support research utilization and implementation of evidences.	4.18
7	Nurse	Possessing skills in the English language (reading and comprehension).	4.18
8	Organization	Institutional motivations for persons conducting and implementing research studies.	4.16
9	Research	Increasing research knowledge base.	4.14
10	Communication	Providing colleague support networks.	4.14
11	Organization	Accessibility of an expert committee for critical appraisal, especially with regard to the presenting of sound results.	4.12
12	Research	Conducting more clinically focused and relevant studies.	4.12
13	Organization	Allocating specific time for reviewing and implementing research findings.	4.11
14	Research	Improve understandability of the research reports.	4.10
15	Organization	The goals of the organization should support research activities and reflects its mission.	4.08
16	Communication	Collaboration between knowledgeable nursing colleagues and nursing faculty in clinical setting.	4.08
17	Organization	Enhancing administrative support and encouragement for change by developing rewarding system and decentralized authority.	4.08
18	Organization	Assure decentralized administration and establish unit-level committees to allow greater research utilization by the staff.	4.08
19	Research	Presentation and discussion of relevant research in clinical area with staff nurses to be clear for implementation.	3.99
20	Communication	Physicians' collaboration and support to change practice.	3.79
The mean score of the total scale is 4.12			

decentralized authority, and the next two facilitators yielded the same score.

These two were "Creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice" and "Opportunity and time to attend and participate in national and international nursing conferences". Of the sample, 50% provide ranking of the second suggested facilitator. After analyzing them, the following were the second greatest three suggested facilitators chosen by the participants: opportunity and time to attend and participate in national and international nursing conferences, followed by institutional motivations for persons conducting and implementing research studies, and creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice. Additionally, 48% of the sample ranked the third suggested facilitator. After analyzing them, the following were the third greatest suggested facilitators chosen by the participants: opportunity and time to attend and participate in national and international nursing conferences, followed by institutional motivations for persons conducting and implementing research studies, and the next two facilitators yielded a tie result. These two were" Enhancing administrative support and encouragement for change by developing rewarding system and decentralized authority" and "conducting more clinically focused and relevant studies". Because there is a repetition in some suggested facilitators, the researcher can conclude that the following are the three greatest suggested facilitators: possessing skills in English language (reading and comprehension), opportunity and time to attend and participate in national and international nursing conferences, and creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice. Two of the three suggested facilitators are related to nurse characteristics and one to organizational characteristics.

In response to items number 21 and 22 that read: “Can you think of other suggested facilitators to utilization of nursing research that were not mentioned in this questionnaire and you would like to add to the list? If so, please list them and use the same rating scale to rate them", the only item which was added is "to increase the number of nurses on each shift to have enough time to go to library and use the internet". This item ranked under "strongly agree" category.

4.3.4. The relationships between demographic characteristics, contextual characteristics, barriers to RU, suggested facilitators to RU, and RU among Jordanian registered nurses.

Person's product correlation analyses was performed to examine the relationship between the age of participants and their total score on barriers to RU scale, total score on suggested facilitators to RU scale and RU. The result indicated a very low negative significant correlation between age and barriers to RU ($P \leq 0.04$). On the other hand, there was a very low positive significant correlation between age and suggested facilitators to RU ($P \leq 0.04$). Additionally, there was a very low positive significant correlation between age and RU ($P \leq 0.001$), gender and RU ($P \leq 0.001$), marital status and facilitators to RU ($P \leq 0.001$), and between level of education and barriers to RU ($P \leq 0.01$) (see Table 11).

On the other hand, there was a very low positive significant correlation between years of experience and facilitators to RU ($P \leq 0.01$), current area of practice (hospital) and barriers to RU ($P \leq 0.01$). However, there was a very low negative significant correlation between years of experience and RU ($P \leq 0.001$), current area of practice (unit\department) and RU ($P \leq 0.001$), job title and RU ($P \leq 0.001$) (see Table 11).

A low positive significant correlation was detected between participation in research study and RU ($P \leq 0.000$), attendance of scientific nursing conferences and RU ($P \leq 0.0001$), having published or accepted articles for publication and RU ($P \leq 0.0001$), and presentation in a scientific conference and RU ($P \leq 0.000$). On the other hand, there was a very low negative significant correlation between presentation in a scientific conference and facilitators to RU ($P \leq 0.03$) (see Table 11).

While, there was a very high positive significant correlation between participation in any research activities and RU ($P \leq 0.0001$), there was a low positive significant correlation between research training other than university or college education and RU ($P \leq 0.0001$). A very low negative significant correlation was detected between reading of research articles and facilitators to RU ($P \leq 0.0001$) and a low positive significant correlation between reading of research articles and RU ($P \leq 0.0001$). Similarly, there was a very low positive significant correlation between the presence of a library and barriers to RU ($P \leq 0.003$), and facilitators to RU ($P \leq 0.44$) and a very low positive significant correlation between having access to the internet and RU ($P \leq 0.98$), and barriers to RU ($P \leq 0.92$).

Table 11. Relationship of Demographic Variables with Barriers, Suggested Facilitators to RU, and RU.

		BRU	BN	BO	BR	BC	SFRU	SFN	SFO	SFR	SFC	RU
Demographic Variables	1. Age	-.08*	-.06	-.05	-.09*	-.10*	.08*	.03	.09*	.09*	.02	-.13**
	2.Gender	.00	-.11**	.04	.02	.08*	.08	.05	.06	.10*	.10*	.14**
	3.Marital status	-.02	-.01	-.02	-.00	-.04	.11**	.08	.13**	.09*	.08	-.05
	4.Level of education	.10*	.21**	.01	.07	.03	.05	.03	.02	-.00	.03	-.23
	5.Years of experience in nursing	-.03	-.00	-.03	-.07	-.04	.10*	.03	.15**	.09*	.04	-.14**
	6.Current area of practice (hospital)	.10*	.02	.17**	.08	.03	.04	.05	.08*	.00	-.00	.02
	7.Current area of practice (unit\department)	.02	.04	-.02	-.01	-.00	.06	.02	.07	.02	.05	-.14**
	8.Position	-.01	-.01	-.02	.05	-.04	.05	.03	.04	.07	.02	-.23**
contextual variables	9.Participation in a research study	.06	-.01	.09*	.03	.06	-.01	.03	.00	-.03	-.04	.48**
	10. Attended to scientific nursing conferences.	.02	-.08*	.07	.05	.03	.01	.01	.00	.03	.02	.35**
	11. Having published or accepted articles for publication	.05	.01	.10*	-.06	-.01	-.05	.02	-.04	-.08*	-.08*	.27**
	12. Presentation in a scientific conference	-.03	-.10*	.03	-.08	-.02	-.09*	-.06	-.08	-.08	-.09*	.26**
	13. Participation in any research activities	.06	-.04	.12**	-.04	.12**	-.07	.03	-.07	-.05	-.11**	.93**
	14. Research training other than university or college education	-.05	-.20**	.02	-.10*	.07	-.07	-.05	-.05	-.08	-.09*	.37**
	15. Reading to research articles.	-.00	-.02	-.01	-.05	.11*	-.18**	-.11**	-.13**	-.15**	-.16**	.33**
	16. Presence of a library	.15**	.02	.19**	.12**	.12**	.11**	.08*	.12**	.11**	.04	.05
	17. Having access to the internet	.12**	-.01	.21**	.09*	.05	.03	.07	.02	.03	-.01	.17**
	***Research utilization	.05	-.11**	.14**	-.10*	.13*	-.04	.01	-.03	-.05	-.09*	1

Key: BRU-Barriers to RU, **BN**- Barriers related to nurse, **BO**- Barriers related to organization, **BR**- Barriers related to research, **BC**- Barriers related to communication, **SFRU**- Suggested facilitators to RU, **SFN**- Suggested facilitators related to nurse, **SFO**- Suggested facilitators related to organization, **SFR**- Suggested facilitators related to research, **SFC**- Suggested facilitators related to communication, **RU**-Research Utilization

Note. ** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

4.3.5. Predictors to research utilization among Jordanian registered nurses

The goal for conducting multiple regression analysis is to evaluate whether the entire set of variables; demographic characteristics, eight of the contextual characteristics, all subscales of barriers to RU, and facilitators to RU subscale related to communication are sufficient to predict RU.

All subscales of barriers to RU, and facilitators to RU subscale related to communication were included in regression because Rogers' Diffusion of Innovations theory indicates that they may have a "causal influence" on RU and may have significant correlations with RU. Some of the demographic and contextual characteristics were included in regression because they were known to be useful predictors of RU and have significant correlations with RU as reflected in the reviewed literature.

Prior to doing a multiple regression, the following preliminary screening was done:

1- Research utilization "the outcome variable" has normal distribution shape. All quantitative predictor variables (age, years of experience, all subscales of barriers to RU, and facilitators to RU subscale related to communication) had approximately normal distribution shapes. No any group of dummy coded predictors (attended to scientific nursing conferences, reading research articles, participation in a research study, having published or accepted articles for publication, presentation in a scientific conference, participation in any research activities, research training other than university or college education, and having access to the internet) had less than 10 cases.

2- Scatter plot obtained for every pair of quantitative predictors showed a linear relationship between variables with no extreme bivariate outliers.

Simultaneous (also called standard or direct) multiple regression (all 18 predictor variables are entered in one step) using enter technique analysis was performed because it is a preferable approach of regression, all predictors are given equal treatment, and it provides a more conservative assessment of the contribution made by each individual predictor (Warner, 2008).

The overall regression, including all 18 predictors, was statistically significant, $R = .87$, $R^2 = .76$, adjusted $R^2 = .75$, $F = 88.4$, $P<.001$. The results of regression analysis are summarized in table 12, while the unstandardized coefficients (*b*-weights) are presented first; it reflects the actual measure with its associated mean and standard deviation (Munro, 2005). The standardized or beta coefficient reflects the weight associated with z-scores on the variables (Munro, 2005).Standard Error (*SE*) is a measure of the difference between predicted and actual scores. RU could be predicted quite well from the set of 18 variables, with approximately 76% of the variance in RU accounted for by the regression.

To assess the contributions of individual predictors, the standardized or beta coefficients for the individual regression slopes were examined. Eleven of the eighteen predictors were significantly predictive of RU; these included years of experience, beta coefficient is 0.065 ($t = 2.765$, $P = .006$); current area of practice (unit\department), beta coefficient is -0.062 ($t = -2.539$, $P = .011$); conducting a research study, beta coefficient is 0.128 ($t = 4.953$, $P = .0001$); having published or accepted articles for publication, beta coefficient is 0.060 ($t = 2.438$, $P = .015$); presentation in a scientific conference, beta coefficient is 0.108 ($t = 4.344$, $P = .0001$); participation in any research activities, beta coefficient is 0.602 ($t = 22.171$, $P = .0001$); research training other than university or college education, beta coefficient is

0.283 (*t* = 11.759, *P* = .0001); having access to the internet, beta coefficient is -0.051 (*t* = 2.218, *P* = .027); barriers related to research, beta coefficient is -0.103 (*t* = -3.659, *P* = .0001); barriers related to communication, beta coefficient is 0.066 (*t* = 2.085, *P* = .038); and facilitators related to communication, beta coefficient is 0.047 (*t* = 2.002, *P* = .046).

The nature of the predictive relation of years of experience is reflected by the signs on the slop. The positive sign for the slope for years of experience indicated that higher scores on years of experience predicted higher scores on RU. The negative sign for the slope for current area of practice (unit\department) indicates that higher scores on current area of practice (unit\department) predict lower scores on RU. The positive sign for the slope for participation in a research study indicated that higher scores on participation in a research study predicted higher scores on RU. The positive sign for the slope for having published or accepted articles for publication indicated that higher scores on having published or accepted articles for publication predicted higher scores on RU. Scores on presentation in a scientific conference were positively related to RU; that is, higher presentation in a scientific conference scores predicted higher scores on RU. Scores on participation in any research activities were positively related to RU; that is, higher participation in any research activities scores predicted higher scores on RU.

The positive sign for the slope for research training other than university or college education indicated that higher scores on research training other than university or college education predicted higher scores on RU. Scores on having access to the internet were positively related to RU; that is, higher access to internet scores predicted higher scores on RU. The negative sign for the slope for barriers related to research indicated that higher scores on barriers related to research

predicted lower scores on RU. The positive sign for the slope for barriers related to communication indicated that higher scores on barriers related to communication predicted higher scores on RU. The positive sign for the slope for facilitators related to communication indicated that higher scores on facilitators related to communication predicted higher scores on RU. Participation in any research activities was the strongest predictor of RU followed by research training other than university or college education followed by conducting research studies followed by presentation in a scientific conference.

The other seven predictors (age, gender, job title, attended to scientific nursing conferences, reading research articles, barriers related to nurse, and barriers related to organizations) were excluded from the final regression model because all of them were not significantly predictive of RU in this regression.

Table 12. Simultaneous Multiple Regression analysis to predictors of RU. N = 539

Variables	***B*** Unstandardized coefficients	***SE***	***β*** Standardized coefficients	***P value***
Years of experience	.024	.009	.065	.006
Current area of practice (unit\department)	-.179	.070	-.062	.011
Conducting a research study	.681	.138	.128	.0001
Having published or accepted articles for publication	.757	.311	.060	.015
Presentation in a scientific conference	1.359	.313	.108	.0001
Participation in any research activities	3.207	.145	.602	.0001
Research training other than university or college education	2.411	.205	.283	.0001
Having access to the internet	.315	.142	.051	.027
Barriers related to research	-.402	.110	-.103	.0001
Barriers related to communication	.262	.126	.066	.038
Facilitators related to communication	.161	.081	.047	.046

* Predictors of RU final model produced at $\alpha = .05$, $F = 88.4$, $P < .0001$, $R^2 = 0.76$, adjusted $R^2 = 0.75$.
Excluded variables are: age, gender, job title, attendance to scientific nursing conferences, reading research articles, barriers related to nurse, and barriers related to organizations.

4.4. Summary

A sample of 539 registered nurses working in MOH hospitals, private hospitals, and teaching hospitals participated in this study. Results showed that only 19.6% of participants have participated in real implementation of research findings. The mean age of the sample was 29 years, 81% of the participants had Baccalaureate Degree, 77% of the sample had ten years and less of experience in nursing, 48% of the sample is working in medical and surgical departments.

Results revealed that the top five sources of knowledge used by Jordanian registered nurses to guide their practice included: information learned during nursing education, personal experience in nursing over time, what learned through providing care to patients, discussion between physicians and nurses about patients, information from policy and procedure manuals. Additionally, the results reflected that the strongest barriers were organizational characteristics, research characteristics, communication characteristics, and nurse characteristics respectively. Accordingly, the top five barriers based on ranking of mean scores were: 1) routines in providing nursing care dominate, 2) lack of consistency between education and practice in nursing discipline, 3) lack of organizational and administrative motivation for its employee to do research, 4) the nurse is too busy providing patient care and has no time to read research reports or studies, and 5) the shortage of staff nurses hinders the implementation of new evidences. All of these barriers are related to the organization.

The following items were added by the participants as additional perceived barriers: the nurses work under doctors order and there is no any role to nurses in decision making process in providing the care to patients, low confidence in healthcare providers other than doctors, nurses inability to determine the appropriate

researchable problem, finally, nurses lose their enthusiastic as a result of the community bad impression to nursing profession.

The top five suggested facilitators based on ranking of mean scores were: 1) opportunity and time to attend and participate in national and international nursing conferences, 2) creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice, 3) having computer skills to allocate research reports, 4) develop policy and procedures that support change of practice and use of new evidences, and 5) providing facilities and resources that promote access to research reports. The only item which was added is to increase the number of nurses on each shift to have enough time to go to library and use the internet.

Person's product correlation coefficient analyses indicated a positive significant correlation between RU and some demographic characteristics and barriers and suggested facilitators' scales and a negative correlation with the others.

Simultaneous multiple regression analysis indicated that age, gender, years of experience, job title, current area of practice (unit\department), all subscales of barriers to RU, and facilitators to RU subscale related to communication, attended to scientific nursing conferences, reading research articles, participation in a research study, having published or accepted articles for publication, presentation in a scientific conference, participation in any research activities, research training other than university or college education, and having access to the internet explained 76% of the variance in RU. Eleven of the 18 predictors were significantly predictive of RU, while age, gender, job title, attendance of scientific nursing conferences, reading research articles, barriers related to nurse, and barriers related to organizations were excluded.

CHAPTER FIVE

Discussion

This chapter discusses the main findings of the current study, particularly the research questions that assess the sources of knowledge registered nurses use to guide their practice. The barriers and suggested facilitators to RU and their relations with demographics and contextual characteristics and RU, and predictors to RU among Jordanian registered nurses are also discussed. Moreover, nursing implications, limitations and strength of the study, conclusion about the study and recommendations for further research studies are high lightened.

5.1. Sources of knowledge utilized by Jordanian registered nurses

Few studies have discussed the sources of knowledge nurses use in their practice. Regarding sources of knowledge used by Jordanian registered nurses, the results of this study found that among the most ten sources of knowledge used, six were based on evidence. Those six sources are: "information learned during nursing education (ranked first)", "information from policy and procedure manuals (ranked forth)", "courses specific only to particular departments (ranked sixth)", "information from attending in-services training programs (ranked seventh)", "information from medication leaflets' (ranked eighth)", and "information in textbooks (ranked ninth)".

The other sources of knowledge used by Jordanian registered nurses were not based on evidence such as "personal experience in nursing over time (ranked second), "what learned through providing care to patients (ranked third), "discussion between physicians and nurses about patients (ranked fifth)","information shared between nurses (ranked tenth)", and "new therapies & medications described to patients by physicians (ranked eleventh)". The most frequently sources of knowledge utilized by Jordanian registered nurses were the same as those utilized in other developed and

developing countries, although the rank order of frequency assigned to each have varied from study to study (Estabrooks's, 1998; Ozsoy & Ardahan, 2008; Oh, 2008; Squires, et al., 2007; Wilcox & Brown, 2009). Estabrooks's (1998) found that the most frequently used sources of knowledge by nurses as ordered from the most to the least frequent were as follows: nurses' experience, nursing school, work place sources, physician sources, intuitions, and what has worked with nurses for years. More recently, Ozsoy and Ardahan (2008) found that the first three most frequently used sources of knowledge were sources that were not based on research evidence such as intuition and personal work experience.

In Oh (2008) and Squires, et al. (2007) studies, the ward procedure manual were the most accessible and convincing information source among nurses. While in Wilcox and Brown (2009) dissertation study, tradition, authority, clinical experience, trial and error, and intuition were the most sources of knowledge used by 66% of nurses, followed by the journal of oncology nursing, then Oncology Nursing Society (ONS) website. Additionally, Spenceley, O'Leary, Chizawsky, Ross, and Estabrooks (2008) in their review paper of 32 research studies, reported that the sources of knowledge most often ranked within the top five sources of knowledge were information shared between registered nurses, followed by nursing journals, reference material such as procedure manual, personal work experience and information obtained from patients or their families.

In this study, the three most frequently used sources of knowledge were information learned during nursing education followed by personal experience in nursing over time, and what learned through providing care to patients. The rationale for this might be related to that the baccalaureate nursing education form the foundation for nursing practices. The participants in this study had been away of their

baccalaureate nursing education program for an average of 7 years and their mean age was 29 years. This means that the evidence they use is old in most areas such as adult nursing, pediatric nursing, critical care nursing, nursing administration…etc considering the rapid advancements in knowledge technology. The other two sources were related to experience because mostly new nurses depend in their practice on what he\she learn from experienced nurses in the unit\department who teaches the unit routine work to new comers.

Published articles in nursing research journals, in nursing journals, and in medical journals were the least three sources of knowledge utilized by Jordanian registered nurses. The justification for this might be related to the limited attendance to nursing conferences, nurses have no time to read research studies or go to the library, and unavailability of Jordanian nursing journals. Also this might be related to the late in starting research training in Jordan. Unavailability of printed research studies in clinical areas and at the same time difficulty to access the internet and lack of time may be other causes for not consulting the literatures.

5.2. Barriers and suggested facilitators to RU among Jordanian registered nurses

5.2.1. Barriers to RU among Jordanian registered nurses

In this study, many barriers and facilitators to RU among Jordanian registered nurses were determined. The main factor that was identified as a barrier to RU was organization factor. This finding was congruent with the literature that describes the barriers to RU (Bostrom, et al., 2008; Chau, et al., 2008; Funk, et al., 1991; Kajermo, et al., 2008; Salsali & Mehrdad, 2009; Tsai, 2000).

The level of RU is very low and this is related to the presence of several barriers to RU. All the items mentioned in barriers section were considered barriers to RU by all participants of Jordanian registered nurses but with different levels of significance.

The greatest twenty one barriers identified were consistent with previous studies (Funk et al., 1995; Gerrish et al., 2007; Mehrdad et al., 2008; Ofi, et al., 2008; Salsali & Mehrdad, 2009). Nine of those twenty one barriers were not stated in Funk, et al's tool, and they were derived from the literature. All of these identified barriers were mentioned by respondents' when they answered the open ended questions in several studies (Funk et al., 1995; Gerrish et al., 2007; Mehrdad et al., 2008; Ofi, et al., 2008; Salsali & Mehrdad, 2009). Thirteen of those identified twenty one barriers fall under the organization subscale; three of them fall under the communication subscale, and two falls under the nurse subscale. This indicates that barriers are multifaceted and varied.

The item that states "Routine in providing nursing care is dominate" was ranked first as an important barrier to RU and it falls under the organization subscale. This is consistent with research findings (Mehrdad & Salsali, 2008). The explanation for this result was related to that most new nurses depend in their practice on what they learn from experienced nurses in the unit\department.

Lack of consistency between education and practice in nursing discipline was ranked as a second barrier. The explanation for this result may be related to that the research courses taught to students in faculties of nursing in different Jordanian universities emphasize on how to conduct research more than how to implement the findings of research into real clinical settings.

Lack of organizational and administrative motivation for the employee to do research was ranked third in significance as a barrier to RU and it fall under the organization subscale. This barrier may be explained by the presence of other barriers such as ‘administrators and decision makers lack of interest in identifying better ways of do things’ (ranked twenty-greater barrier), ‘administrators would not allow the

implementation of new evidences' (ranked twenty eight-mild barrier), and administrators prevent nurses from using library and internet (ranked thirty two-mild barrier). This result might be attributed to that many nursing moderators of hospitals were hold three years diploma and have graduated since a long time and have been taught according to old curricula that did not have research courses which makes it difficult for them to embrace the importance of RU and evidence-based practice. These barriers were congruent with the findings of other studies (Hutchinson & Johnston, 2004; Kajermo, et al., 2008; Mehrdad & Salsali, 2008; Salsali & Mehrdad, 2009). Mehrdad & Salsali (2008) indicated that 'administrative and managerial staffs are not supportive of implementing change based on research findings'. Furthermore, Salsali & Mehrdad (2009) reported that nurses claimed that they received the least support from persons in management positions in relation to RU and pointed out that the ward manager is the most vital source of support. In Kajermo, et al. (2008) study, lack of support from head nurses was the first ranked barrier. Moreover, in Hutchinson and Johnston (2004) study, this barrier ranked fifth. Enhancing administrative support and encouragement of nurses by developing rewarding system and decentralizing decision-making, developing a shared governance system and allowing nurses to use the available organizational resources such as library and internet...etc may facilitate RU.

Other barriers were rated as important barriers to RU in several studies, regardless of the differences of the rank order of each barrier from one study to another. These include: "the nurses were too busy providing patients care and had no time to read research studies, and there is insufficient time on the job to implement new evidences". These two barriers may be related to another barrier which is "the shortage of staff nurses hinders the implementation of new evidences". The time issue

was mentioned in all research studies investigating this phenomenon with the exception that 62% of nurses in Ofi, et al. (2008) disagreed with that the time is a barrier to RU. Nurses from different hospital units and departments claimed that they had a lot of responsibilities for large number of patients and there is no enough nurses working on each shift to respond to patients needs and sometimes the nurse works two shifts in the same day due to the load of the work in the units and departments. Thus, there was often no time for reading research articles, going to the library, searching in the internet, and sharing in implementation process of new findings or discussing RU issue with administrative persons.

To solve this problem, Mehrdad and Salsali (2008) suggested several strategies such as providing enough time to nurses to read research studies and search data bases during their working hours so that nurses are updated with research evidence. Additionally, this allows nurses to use technology such as internet to quick search for the required articles (Mehrdad & Salsali, 2008). Unavailability of internet access in the unit or department where nurses' work was considered one of the barriers to RU by the participants in the current study (ranked eighth). This finding was consistent with prior research findings (Salsali & Mehrdad, 2009; Veeramah, 2004). More than two third of study participants claimed that there is an internet in their institutions and in most institutions it is available at nurses work places. However, they are not allowed to use it to search about research studies and read them during their work hours. Computers were used by nurses only to enter patients' demographic information.

The item that states "The nurses are not informed about the available research studies" was ranked sixth in significance as a barrier to RU and falls under the communication subscale. This is consistent with the findings of Hutchinson and

Johnston (2004), Kajermo, et al. (1998), Squires, et al. (2007), and Veeramah (2004). This finding may be explained by other barriers such as "research studies are not readily available in clinical areas" (ranked fifteenth-greater barrier), "conducting research being only relevant to nursing educators not to clinical nurses"(ranked thirty three-mild barrier), and "lack of collaboration between academic nurses and practitioners"(ranked fourteenth-greater barrier). Additionally, the history of nursing research in Jordan is short; it started in the late of 1980s, to date there is no refereed nursing journal available in Jordan. Moreover, most of research studies were conducted by academician in universities (Khalaf, Faculty of Nursing First Scientific Nursing Conference presentation-Zarqa Private University, 2010) and the academician do not disseminate the findings to clinical nurses. Furthermore, there are no specific official departments in health care settings accountable to carry out the responsibility to disseminate research findings into the target settings and persons to take the benefits of these studies (personal contact with some registered nurses).

"Other staff nurses are not supportive to implement new evidences" was ranked as a seventh barrier. This finding was supported by Bostrom, et al. (2008) study. This barrier may be explained by other barriers such as "job description does not include statements that mandate participation in efforts or activities to change practice" (ranked sixteenth-greater barrier), "years of experience without any evidence of participation in research activities are enough for nurses to gain high executive posts"(ranked twenty six-mild barrier), "reports usually have unclear applications for nursing practice"(ranked eleventh-greater barrier), and "nurse is dissatisfied with nursing profession, therefore, she/he don't have the enthusiasm to improve it"(ranked twenty seven-mild barrier).

"Conducting research being only relevant to nursing educators not to clinical nurses" (ranked thirty three-mild barrier), there is no documented need to change nursing practice (ranked thirty four-mild barrier), nurse do not see the value of research in their practice (ranked thirty five-mild barrier), the nurse don't like to change the traditional way of work (ranked thirty six-mild barrier), the nurse sees reading and implementing research findings to have little advantage to self development (ranked thirty seven-mild barrier), and the nurse feels the benefits of changing practice will be minimal to patients (ranked thirty eight-mild barrier) were ranked by the majority of respondents as mild barriers. This explained that nurses like to be involved in research studies and to implement research findings and they believe in the quality of research and their benefits to patients health and nursing profession.

The nurses feel that research results are not applicable to their clinical areas (ranked twenty three-mild barrier), the nurse is doubtful about the results of the research study (ranked seventeenth-greater barrier), the research study has not been replicated to be confidently used to change practice (ranked nineteenth-greater barrier), the research reports are not clearly written or unreadable (ranked thirty-mild barrier), the nurse lack the skills to find appropriate research studies (ranked twenty two-mild barrier), the amount of research reports or studies is overwhelming (ranked twenty four-mild barrier), the literature reports contain conflicting results (ranked twenty five-mild barrier), statistical analysis is unclear and difficult to understand (ranked twenty one-greater barrier) the nurse lack the capability to evaluating the quality of research articles (ranked thirty one-mild barrier) were ranked by the majority of respondents from moderate to mild barriers. This finding reveals a call for

nursing management and continuing education departments to condense their efforts toward building a research culture in organizations.

The item that states "There are insufficient resources (e.g. equipment) in the clinical areas to help in implementing research findings" was ranked twelfth (greater barrier) in significance as a barrier to RU and falls under the organization subscale. And there are difficulties to obtain new instruments that may be needed to implement research findings was ranked eighteenth (greater barrier) in significance as a barrier to RU and fall also under the organization subscale. These two findings were supported by several studies (Bostrom, et al., 2008; Chau, et al., 2008; Kajermo, et al.,1998; Mehrdad & Salsali, 2008; Salsali & Mehrdad, 2009; Squires, et al., 2007).Lack of resources may explained that our country is one of the developing countries that had limited resources and financial support to research. Yet, this may not be considered a pure reason since many research findings don't require resources to be implemented and that conferences and scientific days became a phenomenon in Jordan and nurses are invited to attend either for free or with minimal fees.

Lack of enough authority to change patient care procedures according to research findings was rated among the greatest barriers to RU (ranked thirteen). This finding is congruent with findings of several prior studies (Chau, et al., 2008; Hutchinson & Johnston, 2004; Mehrdad & Salsali, 2008; Parahoo, 2000). Physicians who are working in Jordanian institutions dominate over all other healthcare providers. Nurses follow physicians order, and have no place in decision making process, and physicians feels that nurses have no enough knowledge to take their decisions regarding patients health. Mehrdad and Salsali (2008) pointed out that nurses need legal authority to create better working conditions to work within full professional scope of nursing practice.

Nurses have English language problems were considered as a mild barrier. This result is expected as nurses already do not read research studies to face this problem. Additionally, English language is not their first language and most research reports are written in English. Tthis finding was supported by other studies (Bostrom, et al., 2008; Mehrdad & Salsali, 2008).

In response to the open-ended question, "Which of the above items do you feel are the three greatest barriers to nurses' RU?", the greatest three ranked barriers to RU were: lack of organizational and administrative motivation for its employee to do research, routine in providing nursing care dominate, and the nurse is too busy providing patients care and has no time to read research studies were stated by the respondents respectively and this is congruent with the nurses' responses to the items in the tool itself.

Several barriers were added by the respondents as additional barriers to RU. Nurses work under doctor order and there is no any role to nurses in decision making process in providing the care to patients is one of the added barriers although it reflects the same issue as the item that states: "Lack of enough authority to change patient care procedures according to research findings". The second added barrier was low confidence in healthcare providers other than physicians. The third added barrier was nurses' inability to determine the appropriate researchable problem. The final added item was nurses lose their enthusiasm as a result of the community bad impression to nursing profession, this item did not overlap with any other items mentioned in the tool. The added items reflect nurses' high self esteem and necessitate administrative and professional effort.

According to Rogers's diffusion of innovation theory, it's clear that the nurse characteristics, the organization characteristics, the research studies characteristics, and communication channel characteristics play very important role in inhibiting RU.

The results of this study show significant impact of some demographical characteristics' on the overall score of identified barriers to RU. There is a significant negative relationship between age and the overall score of identified barriers to RU. This result may be related to the lack of research knowledge among the more experienced nurses and that years of experience without any evidence of participation in research activities are enough for nurses to gain high executive posts. There is a significant positive relationship between level of education and the overall score of identified barriers to RU. This result is congruent with previous research study (Ofi, et al., 2008). The educated personnel may always try to search for the updated information and during this process they face barriers more than the persons who always do their works according to routine. There is a significant positive relationship between current area of practice (hospital) and the overall score of identified barriers to RU. Always, the private sectors in all countries try to provide the highest quality care and they encourage their workers to do that and considered this as one of their main responsibilities. This may also be related to that the accreditation has become necessary for promotion and marketing purposes.

5.2.2. Suggested facilitators to RU among Jordanian registered nurses

Characteristics of nurse group were ranked as the first greatest suggested facilitators for Jordanian registered nurses demonstrating that Jordanian nurses are enthusiastic to improve themselves and their work place environment and to acquire the research knowledge and to be included in implementation process to improve the quality of life of their patients. Nurses form the corner stone for any improvement in

quality of provided care but they require support and motivation from their institutions managers and decision makers. Characteristics of organization were ranked as the second greatest suggested facilitators for Jordanian registered nurses indicating that Jordanian institutions still do not have a research culture and need vast amount of modifications and improvements. "Characteristics of research group" were ranked as the third greatest suggested facilitators for Jordanian registered nurses demonstrating that nurses value the research studies and need to read research studies and assess them critically in order to be able to implement the findings. The characteristics of communication group were ranked as the least significant suggested facilitators for Jordanian registered nurses demonstrating that the dissemination and presentation of research findings considered easy process if all the previous factors were achieved.

The sequence of the suggested facilitators is very logical, provided a roadmap for administrators to encourage RU. First, the organization may prepare nurses by conducting educational programs which explain the process of conducting and implementing research findings. Second, those nurses prepare their institutions according to their knowledge about RU; this will allow the easy access to the required research studies and the dissemination of information will occur spontaneously from one nurse to another.

Regarding the suggested factors to RU, the study respondents signify that the opportunity and time to attend and participate in national and international nursing conferences is a major suggested facilitator. In studies conducted by Ofi, et al. (2008), Mehrdad and Salsali (2008), and Goderis, Borgermans, Mathieu, Broeke, Hannes, Heyrman, and Grol (2009), the time issue was one of the major barriers that nurses mentioned. Providing enough time for nurses to attend and participate in scientific

conferences is an important concern for administrators and nurse leaders to rise above this problem. This is supported by Kajermo, et al. (1998), Camiletti and Huffiman (1998), Parahoo (2000), and Hutchinson and Johnston (2004).

The next two important suggested facilitators to promote RU found in the literature were also identified by the respondents of the present study. These include: creation of an environment, in which nurses are comfortable in critiquing and evaluating the current practice, and having computer skills to allocate research findings. Goderis, et al. (2009) in their qualitative experimental study, have found that improved motivation from the organization was the second suggested facilitator that led to greater compliance with diabetes care guidelines and resulting in improvement in diabetes care. Additionally, in Mehrdad and Salsali (2008) study, the participants identified this suggested facilitator as an important factor to improve RU process. Kajermo, et al. (1998) and Mehrdad and Salsali (2008) have found that developing skills in searching for appropriate literature is one of the most suggested facilitators to RU.

Other suggested facilitators recognized by Jordanian registered nurses in this study to encourage RU in their daily clinical practice were include "develop policy and procedures that support change of practice and use of new evidences, providing facilities and resources that promote access to research reports, allocate financial resources to support research capacity building activities and to support RU and implementation of evidences, possessing skills in the English language (reading and comprehension), institutional motivations for persons conducting and implementing research studies, increasing research knowledge base, and providing colleague support networks to facilitate RU. Several similar factors that could facilitate RU were identified in the literature. Mehrdad & Salsali (2008) reported in their quantitative

study that support from knowledgeable colleagues and faculty members in the clinical settings, availability of an expert committee to evaluate research studies, training and education in research, possessing English language skills and computer skills, availability of economic resources to conduct research, and institutional motivation were the main facilitators. Also, Leasure, et al. (2008) in their quantitative study mentioned that the facilitators to RU comprise reading journals that publish original research, establish a journal club, the availability of a nursing research committee, easy access to the internet, and establishment of small groups three to four staff members with evidence of critical appraisal abilities to review one procedure at a time and this review should be recognized in annual evaluation. Furthermore, Oranta, Routasalo, and Hupli (2002) pointed out that support from ward sisters, collaboration between all staff members and administrators, having positive attitudes and skills to conduct and implement research findings, research deals with real nursing situations, and understandable language of the articles could facilitate RU. Brown, Wickline, Ecoff, and Glaser (2009) reported that learning environment, building culture, and availability and simplicity of evidence were the main facilitators to RU. Additionally, Vos Veer, Graafmans, Keizer, Jager, Westert, and Voort (2010) reported that administrators support, education, and availability of resources were the most important facilitators to RU.

The least identified suggested facilitator is "physicians' collaboration and support to change practice" this result indicates that Jordanian nurses had their position in institutions and may work as a team with each other to achieve their goals in isolation from physicians and they are sure that nursing profession is a separated profession from medicine science. While this suggested facilitator was considered a second

barrier to RU in Oranta, et al. (2002) study and a ninth barrier in Mehrdad and Salsali (2008) study and a forth barrier in Chau, et al. (2008) study.

In response to open-ended question, "Which of the above items do you feel are the three greatest suggested facilitators to nurses' RU?" possessing skills in the English language (reading and comprehension), opportunity and time to attend and participate in national and international nursing conferences, and creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice were stated by the respondents respectively. This is congruent with what the researcher found after analyzing the items in the tool. Several suggested facilitators were added by the respondents that considered as additional suggested facilitators to RU. To increase the number of nurses on each shift to have enough time to go to library and use the internet is the only added suggested facilitator and this one did not overlap with any item mentioned in the tool.

The results of this study show significant impact of some demographical characteristics on the overall score of suggested facilitators to RU. There is a significant positive relationship between age and years of experience and the suggested facilitators to RU. This result may reveal the loyalty, fond, and caring of experienced nurses to their profession and that they are ready to improve the profession and their work. Also, there is a significant positive relationship between marital status and the suggested facilitators to RU. This result may be explained by that the married person develops a more intense feeling of responsibility toward others as they become responsible for their families.

5.3. Predictors of RU among Jordanian registered nurses

In the current study, multiple linear regression analysis indicated that all subscales of barriers to RU, and suggested facilitators to RU subscale were related to some

factors such as communication, age, gender, job title, years of experience, current area of practice (unit\department), attending scientific nursing conferences, reading research articles, participation in a research study, having published or accepted articles for publication, presentation in a scientific conference, participation in any research activities, research training other than university or college education, and having access to the internet explained three out of four of the variance in RU. However, the rest of unexplained variance indicates the existence of still unexplored factors.

The multiple linear regression analysis reflected that participation in any research activities, research training other than university or college education, conducting research studies, and presentation in scientific conferences were considered the major predictors to RU.

There is a debate about the relationship between demographic and contextual variables with RU; some studies found significant relationships between them while others did not. The results of this study show significant impact of some demographical variation on the overall score of RU. There is a significant negative relationship between age and the overall score of RU. This result is contrary to the results of some other studies (Chau, et al., 2008; Kuuppelomaki & Tuomi, 2005; Smirnoff, et al., 2007). The explanation of this finding may be related to that the more experienced nurses have little knowledge about RU because they did not receive any further research courses in their clinical areas after graduation. Also, there is a significant negative relationship between years of experience and the overall score of RU. This result is contradicted with the results of other studies (Chau, et al., 2008; Tsai, 2000). The explanation of this finding may be related to the same reasons related to the age that the more experienced nurses (older nurses) have little knowledge about

RU because they did not receive any further research courses in their clinical areas after graduation. There is a positive significant relationship between gender and the overall score of RU, no other previous studies considered this relationship; this may be related to that male nurse's form 57% of the sample. This result may explain that male nurses know that nursing is a female profession but they may have an internal force to change this issue and they are sure that their presence in nursing field can strengthen this profession and do some positive changes to achieve their personality in this profession. There is a significant negative relationship between current area of practice (unit\department) and the overall score of RU. The majority of the respondents was working in medical and surgical units, and may feel that their work is routine. There is a significant negative relationship between job title and the overall score of RU. The majority of the sample was bed side nurses, they did not use research in their clinical practice due to lack of support from administrators and lack of time to read and implement research findings into their clinical settings. In Kajermo, et al. (2008) study, dissatisfaction with support from immediate superiors for participating in research and\or project, having no academic degree, and unclear and unrealistic workplace goals were identified as predictors increasing the risk of perceiving barriers to RU in clinical settings.

The results of this study showed that approximately half of the sample never attended any scientific nursing conferences and two thirds of the sample never visited the library after graduation, and the majority of the sample did not receive any research training other than what they received during their university or college education. Those findings were higher in Jordan than in the developed countries because of the increased barriers in Jordan and lack of resources to fund research.

As demonstrated here, demographic and contextual characteristics can play a role in enhancing RU in practice, but continued investigations are required to further define the relationship between demographic and contextual characteristics and RU. The findings add new knowledge about the suggested facilitators that may impact RU in clinical practice. Some of these suggested facilitators have not previously identified in previous studies that discussed RU issue.

5.4. Conclusion

The study results showed that the most frequently used sources of knowledge by Jordanian registered nurses is information learned during nursing education. Additionally, the data arising from this study showed that Jordanian registered nurses recognize the value of research and that RU is an important issue that nurses and other health care providers should not ignore. The institutional environment is a key factor in enhancing RU. Jordanian registered nurses face many barriers to implementing research findings into their different clinical settings. Routine in providing nursing care is dominate, lack of consistency between education and practice in nursing discipline, lack of organizational and administrative motivation for its employee to conduct research, and the nurses were too busy providing patients care and had no time to read research studies were the highest mentioned barriers.

On the other hand, opportunity and time to attend and participate in national and international nursing conferences, creation of an environment in which nurses are comfortable in critiquing and evaluating the current practice, and having computer skills to allocate research findings were the three greatest suggested facilitators to RU. Factors affecting RU are multidimensional and show that optimizing them should be a shared responsibility of nurse administrators and other organizational managers, researchers, clinicians, and academicians.

By identifying the barriers and facilitators for RU, the first step toward evidence-based practice is established toward RU and Jordanian institutions can easily overcome these barriers by putting effective strategies to strengthen RU in Jordanian institutions.

5.5. Strengths of the study

Although, worldwide, there is a good amount of information about barriers and facilitators to RU, this study was the first in Jordan to explore the sources of knowledge, barriers to and suggested facilitators for RU, and predictors to RU among Jordanian registered nurses. The high response rate in this study indicates that the study is very important.

The quantitative methodologies employed in this study with open-ended questions provided additional context for answers. Additionally, this study lays the foundation for future research studies on the gap between theory and practice to understand the problem more fully. Data from the study confirmed the existence of the gap between theory and practice.

5.6. Limitations of the study

Although this study added to the nursing knowledge regarding sources of knowledge used in clinical areas, barriers and facilitators to RU, and predictors of RU among Jordanian nurses, the researcher acknowledged the presence of some limitations. First, the convenience and homogenous sample (for example; registered nurses only included in this study, nursing administrator of each hospital were excluded, one of the public sectors hospitals did not give permission to participate in the study) limit the generalizability and do not reflect the diverse contextual and demographic characteristics of the population.

This study should be repeated to include all healthcare providers as all of them work as a team. Second, the cross-sectional design allows identifying potential correlates of RU but inferences about causality cannot be made based on this study. Third, the use of a self-reported data collection method which specified that the data captured can be viewed as superficial (Polit & Beck, 2004) and there is a risk of social desirability bias (participants may wish to present themselves or their institutions in a good way). To partially overcome this problem, the instrument included several open-ended questions, in an attempt to explore more deeply into some of the questions related to nurses' barriers and suggested facilitators of RU in clinical settings. In future, qualitative studies are recommended to capture more in-depth information about the phenomenon.

5.7. Implications of the Study

The findings of this study add to the body of knowledge regarding sources of knowledge utilized by nurses in their practice, barriers and facilitators to RU, the level of RU, and predictors of RU among Jordanian registered nurses. And thus may provide a foundation for the development of strategies to be implemented to achieve the ultimate goal which is the "evidence-based interventions", to improve the health of patients, decrease the length of stay in hospitals, decrease the cost of treatment, and strengthen nursing profession in Jordan.

5.7.1. Implications for nursing practice

The findings of this study indicate significant challenge to the nursing profession in Jordan. The climate within clinical organizations' is not supportive of using research and administrators are not as well prepared to lead their institutions as they could be. In a time of increasing accountability and competition, administrators should create and promote a culture in which nurses recognize the value of research in

improving their practice, seek the knowledge and skills to empower themselves and their profession, and feel empowered and valued. Some strategies to promote RU and EBP to continue to provide excellent care to patients and to bridge the gap between research and practice should be followed.

Continuing education or in service education departments should conduct training on research for nurses. Journal club and scientific days should be encouraged.

5.7.2. Implications for nursing education

Findings of this study should be incorporated in nursing curricula to teach nurses about the effect of RU on nursing profession, patients, and institution as a whole. Nursing students must be equipped with adequate skills and knowledge of how to establish, evaluate, and implement research findings into different clinical areas to improve patients' care. The skills and knowledge can be introduced at a basic level to beginning students and improved through practice and training throughout the different courses of the academic program. Research articles can be used as the reference for interventions throughout students' progress in academic education. Introducing the critique procedure to research studies in the classroom setting to strengthen the ability of students to evaluate research studies. Furthermore content may include a discussion on evidence-based nursing interventions and strategies that could be implemented to empower nursing profession.

5.7.3. Implications for future research

A study using qualitative research design is encouraged to provide a more in depth information about attitudes toward research and RU. Future research should assess RU and include the barriers related to patients by further confirmation, inspection of the factors loading, and internal consistency of the instrument to be a standardized instrument to measure RU issue in different Arabic cultures. However, the findings of

this study provide information suitable to build strategies to improve RU and put the base for future studies and work.

Nursing administrators and educators in different hospitals should consider a number of strategies to increase RU in clinical settings. The result of this study should be communicated to all health care providers especially policy makers to initiate the first steps toward the construction of evidence-based practice inside all Jordanian hospitals. Promoting lifelong learning among all levels of nurses. Jordanian educational system for nurses should be reviewed for consideration of course content that focuses on using research in practice.

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Appendix A

بسم الله الرحمن الرحيم

زملائي الأفاضل

أنا الطالبة سهير حسني الغبيش، طالبة دكتوراه في الجامعة الأردنية/ كلية التمريض.

أقوم حاليا بعمل بحث بعنوان " استكشاف مصادر المعلومات التي يستخدمها الممرضين والممرضات اثناء عملهم والعوامل التي تؤثر على استخدام نتائج الابحاث العلمية بين الممرضين والممرضات القانونين في الاردن". هدف هذا البحث هو السعي لمعرفة أكثر مصادر المعلومات التي يستخدمها الممرضين والممرضات القانونيين أثناء عملهم وكذلك معرفة المعيقات والمسهلات لعملية تطبيق نتائج الأبحاث العلمية في عملهم حيث أن الهدف الأساسي من البحث العلمي هو التوصل إلى معلومات قيمة قادرة على مساعدة الممرض على تطبيق أفضل ما توصلت إليه هذه الأبحاث العلمية على ارض الواقع وذلك لتحسين مستوى الخدمة المقدمة للمرضى، تسريع عملية شفائهم، تقليل التكلفة المادية المترتبة عليهم والرفع من قيمة مهنة التمريض في المجتمع الأردني.

حيث سيتم توزيع استبانه من قبل الباحثة على الممرضين والممرضات القانونيين والتي تستغرق الإجابة عليها عشرون (٢٠) دقيقة فقط لا غير .

أن المشاركة في هذه الدراسة هي تطوعية بشكل تام وبإمكانك الانسحاب في أي وقت علماً بأن قبولك أو رفضك المشاركة في هذه الدراسة لن يؤثر على وضعك في عملك نهائياً كما أن هذه المعلومات سوف تعامل بسرية تامة ولن يتم استخدامها إلا لأغراض البحث العلمي فقط دون ذكر الأسماء وسيتم نشر النتائج في مجلة علمية متخصصة وسيتم تزويد المستشفيات المشاركة بنتائج البحث.

للمزيد من الأسئلة و الاستفسار الرجاء الاتصال على هاتف : ٠٧٩٦٦٧٠٨٣٧

بمجرد تعبئتك لاستبانه المرفقة فأنت تقر(ين) بأنك توافقين اختيارياً على المشاركة في هذا البحث .

أشكر لكم حسن التعاون

الباحثة: سهير حسني الغبيش

مشرفة البحث : د.فتحية أبو مغلي

Appendix B

استبيان استكشاف الفجوة بين المعلومات النظرية وما هو مطبق عمليا

الجزء الأول: (نموذج المعلومات الديموغرافية وما يتعلق بالمؤسسة والنشاطات البحثية)

١- **العمر بالسنوات:**......................

٢- **النوع**

(١) ذكر (٢) أنثى

٣- **الحالة الاجتماعية:**

(١) أعزب\ عزباء
(٢) متزوج\ ة
(٣) مطلق\ة
(٤) منفصل\ة
(٥) أرمل\ة

٤- **المستوى التعليمي:**

(١) دبلوم ثلاث سنوات\ وزارة الصحة
(٢) بكالوريوس
(٣) ماجستير
(٤) دكتوراه

٥- **عدد سنوات الخبرة في مجال التمريض**...........................سنة\ سنوات

٦- **مكان العمل الحالي**:

مستشفى.......................................قسم...................................

٧- **المسمى الوظيفي**:

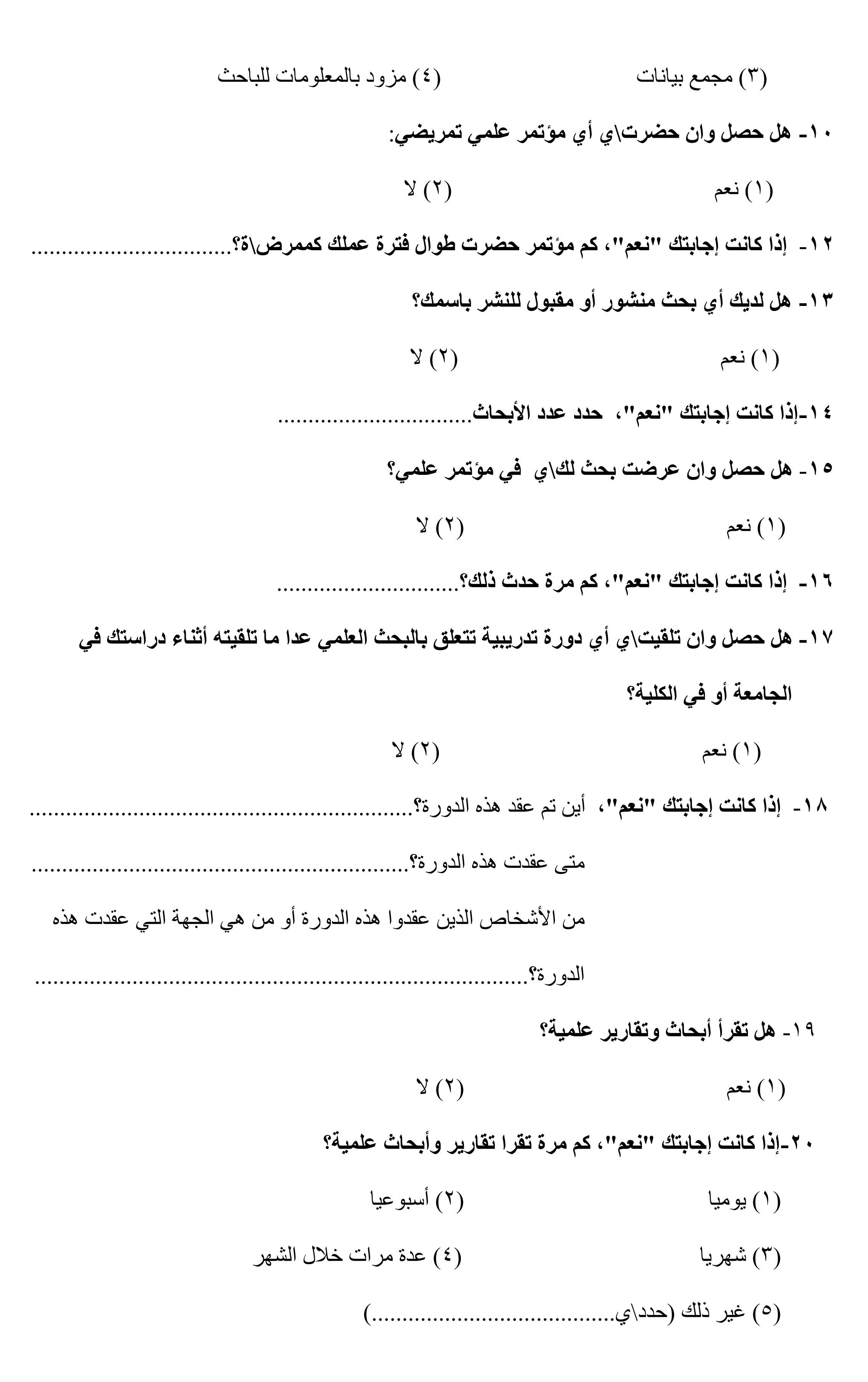
(١) ممرض/ة قانونية
(٢) مسئول/ة شفت
(٣) مدرب/ة سريري/ه
(٤) رئيس/ة وحدة أو قسم
(٥) غير ذلك (حدد\ي......................................)

٨- **هل حصل وان شاركت\ي في أي دراسة بحثية**:

(١) نعم (٢) لا

٩- **إذا كانت إجابتك "نعم"، ما نوع مشاركتك**:

(١)الباحث الرئيسي (٢) مساعد باحث



(٣) مجمع بيانات (٤) مزود بالمعلومات للباحث

١٠- هل حصل وان حضرت\ي أي مؤتمر علمي تمريضي:

(١) نعم (٢) لا

١٢- إذا كانت إجابتك "نعم"، كم مؤتمر حضرت طوال فترة عملك كممرض\ة؟.................................

١٣- هل لديك أي بحث منشور أو مقبول للنشر باسمك؟

(١) نعم (٢) لا

١٤-إذا كانت إجابتك "نعم"، حدد عدد الأبحاث................................

١٥- هل حصل وان عرضت بحث لك\ي في مؤتمر علمي؟

(١) نعم (٢) لا

١٦- إذا كانت إجابتك "نعم"، كم مرة حدث ذلك؟...............................

١٧- هل حصل وان تلقيت\ي أي دورة تدريبية تتعلق بالبحث العلمي عدا ما تلقيته أثناء دراستك في الجامعة أو في الكلية؟

(١) نعم (٢) لا

١٨- **إذا كانت إجابتك "نعم"،** أين تم عقد هذه الدورة؟..

متى عقدت هذه الدورة؟..

من الأشخاص الذين عقدوا هذه الدورة أو من هي الجهة التي عقدت هذه الدورة؟..

١٩- **هل تقرأ أبحاث وتقارير علمية؟**

(١) نعم (٢) لا

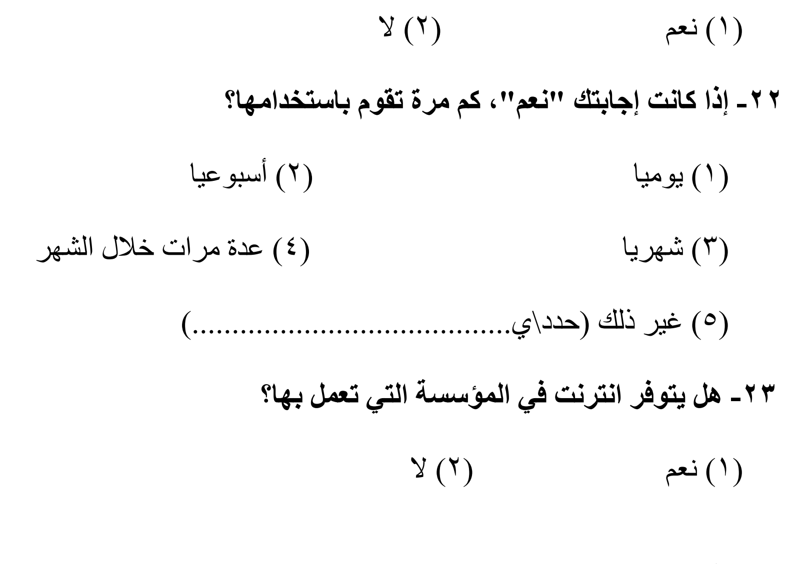
٢٠-إذا كانت إجابتك "نعم"، كم مرة تقرا تقارير وأبحاث علمية؟

(١) يوميا (٢) أسبوعيا

(٣) شهريا (٤) عدة مرات خلال الشهر

(٥) غير ذلك (حدد\ي.......................................)

٢١-هل يتوفر مكتبة في المؤسسة التي تعمل بها؟



(١) نعم (٢) لا

٢٢- إذا كانت إجابتك "نعم"، كم مرة تقوم باستخدامها؟

(١) يوميا (٢) أسبوعيا

(٣) شهريا (٤) عدة مرات خلال الشهر

(٥) غير ذلك (حدد\ي..)

٢٣- هل يتوفر انترنت في المؤسسة التي تعمل بها؟

(١) نعم (٢) لا

٢٤-إذا كانت إجابتك "نعم"، كم مرة تقوم باستخدامه؟

(١) في جميع الأوقات (٢) ساعات محددة في اليوم

(٣) ساعات محددة في الأسبوع (٤) فقط بطلب إذن مسبق

(٥) غير ذلك (حدد\ي..)

الجزء الثاني: اسئلة النشاطات البحثية

٢٥ - هل حصل وان شاركت في أي نشاطات بحثية طوال فترة عملك كممرض\ة؟

(١) نعم (٢) لا

٢٦-إذا كانت إجابتك "نعم"، الرجاء وضع إشارة (X) تحت خانة "نعم" مقابل النشاط البحثي الذي شاركت\ي به وإشارة (X) تحت خانة "لا" مقابل النشاط البحثي الذي لم تشارك\ي به.

الرقم	النشاطات البحثية	نعم	لا
١-	شاركت في نادي المجلة التمريضية الموجودة في المستشفى الذي اعمل به وكنت عضو فعال في الاجتماعات المنتظمة التي كانت تعقد بخصوص المجلة لمناقشة ونقد وتحليل بعض الدراسات البحثية.		
٢-	حضور عرض لأبحاث علمية في مؤتمرات علمية تمريضية.		
٣-	مناقشة نتائج تطبيقات الأبحاث العلمية وما يتعلق بها مع المرضى.		
٤-	إعطاء المرضى معلومات ونصائح لتشجيع مشاركتهم في الأبحاث العلمية.		
٥-	قمت بالمساعدة في جمع بيانات البحث العلمي.		
٦-	مراجعة خطة مشروع بحث.		
٧-	ساهمت في تطوير فكرة مشروع بحثي سريري.		
٨-	شاركت ضمن لجان البحث العلمي في مؤسستي لتقييم المبادئ الأخلاقية لخطة مشروع بحث قبل الموافقة على تطبيقه.		
٩-	قمت بتقييم بحث علمي من ناحية إمكانية تطبيقه على ارض الواقع.		
١٠-	شاركت في عملية التطبيق الفعلي لنتائج بحث علمي.		

<u>الجزء الثالث:</u> معيقات استخدام البحث العلمي على ارض الواقع

هناك عدة دراسات تشير إلى وجود فجوة بين نتائج البحث العلمي وتطبيقها الفعلي على ارض الواقع. ويعتقد أن هذه الظاهرة لها عدة عوامل تؤثر عليها ونحن الباحثين نريد أن نعرف إلى أي مدى تعتقد أن كل من هذه العوامل المذكورة أدناه في الجدول تعتبر عائق للتمريض لاستخدام نتائج الأبحاث العلمية أثناء عملهم .

لطفاً ، اقرأ كل عامل من العوامل المدرجة في الجدول وضع دائرة على الرقم الذي يتناسب مع وجهة نظرك

الرقم	المعيقات التي تؤثر على استخدام نتائج البحث العلمي	لا أوافق بشدة	لا أوافق	لا اعرف	أوافق	أوافق بشدة
	مواصفات الممرض\ة					
-١	الممرض\ة غير راضي عن مهنة التمريض لذلك ليس لديه الحماس لتحسين هذه المهنة .	١	٢	٣	٤	٥
-٢	الممرض\ة لا ترى قيمة للبحث العلمي في عملها .	١	٢	٣	٤	٥
-٣	الممرض\ة ترى أن قراءة وتطبيق نتائج الأبحاث العلمية لها فائدة قليلة جداً لتطوير نفسها .	١	٢	٣	٤	٥
-٤	الممرض\ة لا ترغب في تغيير طريقة العمل التقليدية التي تعمل بها .	١	٢	٣	٤	٥
-٥	ليس هناك أي توثيق رسمي يستدعي الحاجة لتغيير الممارسات التمريضية .	١	٢	٣	٤	٥
-٦	الممرض\ة تشعر بأن الفائدة التي سوف تعود على المريض جراء تغيير الممارسات التمريضية قليلة جداً .	١	٢	٣	٤	٥
-٧	الممرض\ة لا تمتلك القدرة الكافية لتقييم جودة الأبحاث العلمية .	١	٢	٣	٤	٥
-٨	نقص التعاون بين التمريض الأكاديمي والتمريض الذي يعمل مع المرضى .	١	٢	٣	٤	٥
-٩	الممرض\ة ليست على دراية بالدراسات البحثية المعمولة في بلدها .	١	٢	٣	٤	٥
-١٠	الممرض\ة تفتقر إلى المهارات التي تمكنها من إيجاد الدراسات البحثية المناسبة .	١	٢	٣	٤	٥
	مواصفات المؤسسة					
-١١	قلة أو نقص التحفيز المؤسسي والإداري للموظفين لعمل أبحاث علمية .	١	٢	٣	٤	٥
-١٢	الإداريون لا يسمحون بتطبيق النتائج الحديثة .	١	٢	٣	٤	٥
-١٣	لا يوجد هناك وقت كافي لتطبيق نتائج الأبحاث العلمية .	١	٢	٣	٤	٥
-١٤	هناك بعض التمريض الذي لا يدعم عملية تطبيق أي فكرة جديدة.	١	٢	٣	٤	٥
-١٥	لا يوجد أدوات كافية في مكان العمل لتساعدنا في تطبيق نتائج الأبحاث .	١	٢	٣	٤	٥

الرقم	المعيقات التي تؤثر على استخدام نتائج البحث العلمي	لا أوافق بشدة	لا أوافق	لا اعرف	أوافق	أوافق بشدة
-١٦	هناك صعوبات في عملية تحصيل أدوات جديدة وحديثة ممكن أن نحتاجها لتطبيق نتائج الأبحاث .	١	٢	٣	٤	٥
-١٧	الممرض/ة لا تمتلك المسؤولية الكافية أو حرية التصرف في تغيير الممارسات التمريضية المقدمة للمريض حسب نتائج الأبحاث العلمية .	١	٢	٣	٤	٥
-١٨	الممرض/ة دائماً منشغلة جداً في تقديم الرعاية للمريض ولا يوجد لديها وقت كافي لقراءة التقارير والأبحاث العلمية.	١	٢	٣	٤	٥
-١٩	الممرض/ة تشعر بأن نتائج الأبحاث العلمية غير قابلة للتطبيق في مكان عملها.	١	٢	٣	٤	٥
-٢٠	الإداريون يمنعون الكوادر التمريضية من الذهاب إلى المكتبة واستخدام الانترنت.	١	٢	٣	٤	٥
-٢١	الروتين هو السائد في تقديم الرعاية التمريضية .	١	٢	٣	٤	٥
-٢٢	سنوات الخبرة وحدها بدون المشاركة في أي نشاط بحثي كافية للممرض/ة للحصول على مناصب إدارية كبيرة .	١	٢	٣	٤	٥
-٢٣	الإداريون وأصحاب القرارات ليس لديهم اهتمام لمعرفة أفضل الطرق لعمل الممارسات التمريضية.	١	٢	٣	٤	٥
-٢٤	النقص في التمريض القانوني يثبط عملية تطبيق نتائج الأبحاث العلمية .	١	٢	٣	٤	٥
-٢٥	الوصف الوظيفي لا يشتمل على عبارات تلزم المشاركة في تغيير الممارسات التمريضية بناءً على نتائج الأبحاث العلمية.	١	٢	٣	٤	٥
-٢٦	عدم التناسق بين التعليم التمريضي وما يطبق على أرض الواقع.	١	٢	٣	٤	٥
-٢٧	عدم توفر انترنت في القسم الذي أعمل به مما يعيق عملية الوصول إلى الأبحاث القيمة.	١	٢	٣	٤	٥
	صفات الأبحاث العلمية والتقارير					
-٢٨	الدراسات البحثية لم يتم دراستها أكثر من مرة ليتم تطبيقها بثقة لتغيير الممارسات التمريضية.	١	٢	٣	٤	٥
-٢٩	التقارير البحثية تحتوي على نتائج متناقضة.	١	٢	٣	٤	٥
-٣٠	الممرض/ة ليست على يقين تام بنتائج التقارير والأبحاث العلمية.	١	٢	٣	٤	٥
-٣١	أعداد التقارير والدراسات البحثية أصبح كبير جداً مما يؤدي إلى تشتيت الكوادر التمريضية.	١	٢	٣	٤	٥
	صفات تداول الأبحاث العلمية					
-٣٢	الممرض/ة لا تبلغ بالدراسات التمريضية المتوفرة .	١	٢	٣	٤	٥

الرقم	المعيقات التي تؤثر على استخدام نتائج البحث العلمي	لا أوافـق بشدة	لا أوافق	لا اعرف	أوافق	أوافـق بشدة
٣٣-	عادةً التقارير البحثية غير واضحة طريقة تطبيقها على أرض الواقع.	١	٢	٣	٤	٥
٣٤-	الدراسات البحثية والتقارير غير متوفرة في أماكن العمل.	١	٢	٣	٤	٥
٣٥-	التقارير البحثية لا تكتب بأسلوب واضح أو تكتب بأسلوب غير مقروء .	١	٢	٣	٤	٥
٣٦-	التحليل الإحصائي غير واضح ويصعب فهمه.	١	٢	٣	٤	٥
٣٧-	عمل الأبحاث العلمية من واجبات ومهام الأكاديميين وليس الممارسين للمهنة في المستشفيات.	١	٢	٣	٤	٥
٣٨-	هناك مشاكل في فهم اللغة الانجليزية لأنها ليست لغتنا الأم ومعظم الأبحاث التمريضية تكتب باللغة الانجليزية.	١	٢	٣	٤	٥
	هل لديك معيقات أخرى لعملية تطبيق نتائج الأبحاث العلمية في العمل لم يتم ذكرها في هذا الاستبيان وترغب بإضافتها إلى هذه القائمة. لطفاً اذكرها وقم بإعطائها رقم مناسب حسب وجهة نظرك.					
٣٩-		١	٢	٣	٤	٥
٤٠-		١	٢	٣	٤	٥
٤١-		١	٢	٣	٤	٥

٤٢- باعتقادك ما هي أكثر ثلاث معيقات مما ذكر أعلاه تعرقل عملية استخدام نتائج الأبحاث العلمية في العمل؟

أكثر معيق ---------------------------------- بند رقم ---------

ثاني أكثر معيق ---------------------------- بند رقم ---------

ثالث أكثر معيق ---------------------------- بند رقم ---------

الجزء الرابع: العوامل التي تسهل استخدام نتائج الأبحاث العلمية

الرقم	العوامل التي تسهل استخدام نتائج البحث العلمي	لا أوافق بشدة	لا أوافق	لا اعرف	أوافق	أوافق بشدة
	مواصفات الممرض/ة					
١-	امتلاك مهارات في اللغة الانجليزية (قراءة وإنشاء).	١	٢	٣	٤	٥
٢-	امتلاك مهارات في الكمبيوتر للتمكن من البحث عن التقارير والأبحاث العلمية .	١	٢	٣	٤	٥
	مواصفات المؤسسة					
٣-	إيجاد بيئة مريحة للممرض /ة تستطيع من خلالها نقد وتقييم المهارات التمريضية المطبقة عملياً على أرض الواقع.	١	٢	٣	٤	٥
٤-	تحسين الدعم والتشجيع الإداري لتغيير الممارسات الحالية بأن يتم تطوير نظام المكافأة واللامركزية في اتخاذ القرارات.	١	٢	٣	٤	٥
٥-	تخصيص وقت محدد ضمن ساعات الدوام الرسمي لمراجعة الأبحاث العلمية وتطبيق نتائجها عملياً.	١	٢	٣	٤	٥
٦-	إتاحة الفرصة والوقت للممرض /ة للحضور والمشاركة في المؤتمرات التمريضية المحلية والدولية.	١	٢	٣	٤	٥
٧-	توفير لجنة خبراء بالبحث العلمي للقيام بالتقييم الدقيق للأبحاث وبالذات الأبحاث ذات النتائج المهمة جداً.	١	٢	٣	٤	٥
٨-	توفير تسهيلات وأدوات مثل الانترنت التي تشجع وتسهل عملية الوصول للأبحاث والتقارير العلمية.	١	٢	٣	٤	٥
٩-	التحفيز المؤسسي للأشخاص الذين يقومون بعمل أبحاث علمية وتطبيق نتائجها في عملهم.	١	٢	٣	٤	٥
١٠-	توفير الدعم المالي لعقد دورات تدريبية خاصة بالبحث العلمي وتدعم تطبيق نتائج البحث العلمي عملياً.	١	٢	٣	٤	٥
١١-	أهداف المؤسسة يجب أن تدعم نشاطات البحث العلمي وتعكس رؤية وتطلعات هذه المؤسسة .	١	٢	٣	٤	٥
١٢-	دعم الإدارة اللامركزية وإنشاء لجان على مستوى الأقسام لتسمح بتطبيق نتائج الأبحاث العلمية من قبل كوادر كل قسم على حدة.	١	٢	٣	٤	٥
١٣-	تطوير سياسات وآليات تدعم تغيير الممارسات التمريضية وتطبيق نتائج الأبحاث العلمية الحديثة.	١	٢	٣	٤	٥
	مواصفات الأبحاث والتقارير العلمية					
١٤-	عمل أبحاث علمية وثيقة الصلة بالواقع العملي.	١	٢	٣	٤	٥
١٥-	زيادة قاعدة المعلومات التي تتعلق بالبحث العلمي لدي الممرضين والممرضات.	١	٢	٣	٤	٥
١٦-	تحسين فهم التقارير والأبحاث العلمية لدى الممرضين والممرضات.	١	٢	٣	٤	٥
١٧-	طرح ومناقشة الأبحاث ذات الصلة بالواقع العملي مع الكادر التمريضي لتصبح عملية تطبيقه واضحة لهم.	١	٢	٣	٤	٥
	مواصفات تداول الأبحاث العلمية					
١٨-	تعاون الأطباء ودعمهم في عملية تغيير الممارسات التمريضية وغيرها.	١	٢	٣	٤	٥
١٩-	التعاون بين الزملاء الذين لديهم العلم الكافي في البحث العلمي والممرضين الذين يعملون في كليات التمريض أثناء تواجدهم في المستشفيات.	١	٢	٣	٤	٥
٢٠-	إيجاد شبكة اتصال مشترك بين التمريض في جميع الأماكن.	١	٢	٣	٤	٥
	هل لديك تسهيلات أخرى لعملية تطبيق الأبحاث العلمية في العمل لم يتم ذكرها في هذا الاستبيان وترغب بإضافتها إلى هذه القائمة. لطفاً اذكرها وقم بإعطائها رقم مناسب حسب وجهة نظرك.					

الرقم	العوامل التي تسهل استخدام نتائج البحث العلمي	لا أوافق بشدة	لا أوافق	لا اعرف	أوافق	أوافق بشدة
-٢١		١	٢	٣	٤	٥
-٢٢		١	٢	٣	٤	٥
-٢٣		١	٢	٣	٤	٥

٢٤ـ باعتقادك من مِنَ البنود السابقة تشعر بأنها من أكثر المسهلات للتمريض لتطبيق نتائج الأبحاث العلمية في العمل؟

أكثر عامل مسهل لاستخدام نتائج الأبحاث العلمية ---------------------------------- بند رقم --------

ثاني أكثر عامل مسهل لاستخدام نتائج الأبحاث العلمية --------------------------- بند رقم --------

ثالث أكثر عامل مسهل لاستخدام نتائج الأبحاث العلمية --------------------------- بند رقم --------

<u>الجزء الخامس:</u> مصادر المعلومات التي يستخدمها التمريض القانوني أثناء عمله:

الرقم	المعلومات التي استخدمها أثناء عملي مبنية على......	أبدا	نادرا	بعض الأحيان	باستمرار	دائما
-١	ما تعلمته خلال تقديمي الخدمة لمرضاي.	١	٢	٣	٤	٥
-٢	الحدس، ما أراه صحيح وأستطيع عمله لمرضاي.	١	٢	٣	٤	٥
-٣	خبرتي الشخصية في التمريض على مدى الأيام.	١	٢	٣	٤	٥
-٤	ما اكتسبته من معلومات أثناء دراستي للتمريض.	١	٢	٣	٤	٥
-٥	ما يقوم الأطباء بمناقشته معي بخصوص مرضاي.	١	٢	٣	٤	٥
-٦	علاجات جديدة يقوم الأطباء بوصفها لمرضاي.	١	٢	٣	٤	٥
-٧	دراسات علمية منشورة في مجلات طبية.	١	٢	٣	٤	٥
-٨	دراسات علمية منشورة في مجلات تمريضية.	١	٢	٣	٤	٥
-٩	دراسات علمية منشورة في مجلات بحثية تمريضية.	١	٢	٣	٤	٥
-١٠	معلومات احصل عليها من الكتب.	١	٢	٣	٤	٥
-١١	ما تعلمته من خلال مراجعاتي للأطباء عندما كنت امرض.	١	٢	٣	٤	٥
-١٢	الطريقة التي أنا معتاد أن اعمل بها.	١	٢	٣	٤	٥
-١٣	المعلومات التي أتناقش بها مع زملائي.	١	٢	٣	٤	٥
-١٤	المعلومات التي أحصل عليها من خلال حضوري برامج تدريبية تعقد في المؤسسة التي اعمل بها أو مؤتمرات تمريضية.	١	٢	٣	٤	٥
-١٥	معلومات احصل عليها من كتاب سياسات وممارسات القسم.	١	٢	٣	٤	٥
-١٦	معلومات احصل عليها من خلال وسائل الإعلام (المجلات، التلفاز، الانترنت).	١	٢	٣	٤	٥
-١٧	دورات خاصة تتعلق في القسم الذي اعمل به.	١	٢	٣	٤	٥
-١٨	نشاطات لمؤسسات تمريضية في فروع محددة.	١	٢	٣	٤	٥
-١٩	معلومات احصل عليها من خلال الممرض/ة المسئول في القسم/الوحدة.	١	٢	٣	٤	٥
-٢٠	معلومات احصل عليها من خلال النشرة العلاجية المرفقة مع العلاج.	١	٢	٣	٤	٥
-٢١	معلومات احصل عليها من خلال التقارير المحلية المدونة.	١	٢	٣	٤	٥
	هل هناك مصادر أخرى للمعلومات تستخدمها أثناء عملك ولم يتم ذكرها في هذا الاستبيان. إن وجدت، لطفا اذكرها وصنفها حسب درجة استخدامك لها.					
-٢٣		١	٢	٣	٤	٥
-٢٤		١	٢	٣	٤	٥
This questionnaire was adapted from: Estabrooks, C. A. (1999). Will Evidence-Based Nursing Practice Make Practice Perfect?. *Canadian Journal of Nursing Research,* 30(4): 273-294.						

شاكرين لكم مشاركتكم في هذه الدراسة

Appendix C

RE: permission to use barriers scale

Friday, September 10, 2010 4:55 AM

From:

"Sandy Funk" <sfunk@email.unc.edu>

View contact details

To:

"'Suhair al-ghabeesh'" <suhair_alghabeesh@yahoo.com>

Dear Ms. Al-Gabeesh:

Thank you so much for your offer to co-supervise your dissertation, but I'm sorry to say that I must decline. My schedule is quite full.

Your permission form indicated that you would like to revise the scale by adding and deleting items and changing the wording. Please know that the current psychometrics will not apply if you make these changes. We would like to see changes before approving them. So, if you could e-mail them to me, I will check them out.

In addition, if you are going to use the scale in Arabic, we would like a copy of the Arabic version you use.

I will check with my University to see if they will allow me to mail the original article to you. Most of the articles (most of which are on our web page: barriers.web.unc.edu) can be accessed in online versions on the Internet.

Sandy Funk

Sandra G. Funk, PhD, FAAN

Professor

School of Nursing

CB# 7460, Carrington Hall

University of North Carolina at Chapel Hill

Chapel Hill, NC 27599-7460

email: sfunk@unc.edu

BARRIERS web site: barriers.web.unc.edu

Appendix D

Permission to use Estabrooks' Sources of Knowledge Questionnaire

Monday, October 4, 2010 3:47 AM

From: "Janet Squires" <janet.squires@nurs.ualberta.ca>

To: "suhair_alghabeesh@yahoo.com" <suhair_alghabeesh@yahoo.com>

Cc: "Carole Estabrooks" <carole.estabrooks@ualberta.ca>

Dear Suhair Al-Ghabeesh

Thank-you for your query on the 'Sources of Practice Knowledge Questionnaire'. I am a doctoral candidate studying under the supervision of Dr Estabrooks. I work closely with her on areas related to research utilization and am therefore responding to your request on her behalf.

Please accept this email as confirmation that you can use the above-mentioned questionnaire in your PhD dissertation.
Conditions of use for this instrument include the following:
1. Any modifications to the questionnaire must first be approved by Dr Estabrooks
2. You are required to acknowledge Dr Estabrooks as the source of the questionnaire (both on the questionnaire itself and in any publications resulting from its use)
3. Any requests you receive for further use of the questionnaire as a result of your research require Dr Estabrooks approval

Dr. Estabrooks would also be interested in hearing the findings from your study when you have them.

If you have any further questions please feel free to contact me.

Good luck with your research.

Regards,
Janet

Janet Squires RN PhD Student
Faculty of Nursing, University of Alberta

استكشاف مصادر المعلومات والعوامل التي تؤثر على استخدام نتائج الابحاث العلمية بين الممرضين والممرضات القانونين في الاردن.

اعداد
سهير حسني الغبيش

المشرف
الدكتورة فتحية ابو مغلي

المشرف المشارك
الاستاذ الدكتور مهفاش سلسالي

الملخص

اصبح معروفا بأن ادماج المعرفة المبنية على الأدلة التي تنتجها الدرسات النوعية والكمية في الممارسة العلمية يقلل من تكاليف الرعاية الصحية ، وزيادة الانتاجية الشخصية ،وتحسين صحة الناس ، ويقلل من الألم والمعاناة للمرضى .والتالي ،فان استخدام البحوث قد ظهر كمفهوم هام لمقدمي الرعاية الصحية ، ومع ذلك ، هناك العديد من العوائق التي تحول دون استغلال للبحوث في المجالات الطبية . الهدف العام من هذه الدراسة هو استكشاف مصادر المعلومات التي يستخدمها الممرضين والممرضات أثناء عملهم وتنبؤ العوامل التي تحد من الاستفادة من نتائج البحوث في الممارسة السرسرية .
تم استخدام منهج الدراسة العلائقية الوصفية لجمع البيانات من ٥٣٩ من الممرضين والممرضات الأردنيين من ١٠ مستشفيات ،وذلك باستخدام استبيانة ذاتية التعبئة .
كان متوسط سنوات الخبرة للعينة يساوي ٧,٠٨ سنة وكشفت النتائج أن مصدر المعرفة الاكثر استخداما بين الممرضين والممرضات هو المعلومات المكتسبة من خلال تعليم التمريض .كما أشار تحليل الانحدار أن بعض الخصائص الديموغرافية والسياقية والحواجز التي تتعرض لتطبيق الابحاث أوضح ٧٦% من منبات استخدام الأحداث .
خلصت الدراسة الى أن الممرضة الأردنية تدرك قيمة البحوث واستخدام نتائجها هي قضية مهمة ويجب عدم تجاهلها . دراسة اثار كثيرة عن التعليم والممارسة والبحث .مديري الرعاية الصحية وصانعي القرار بحاجة الى لعب دور أكثر وضوحا وفعالا في تشجيع استخدام نتائج الابحاث العلمية في عملهم وازالة الحواجز وتيسير الدعم لتطبيق هذه النتائج لتحسين نوعية الحياة للمرضى .